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GUIDELINES FOR TRAINING COMMUNITY HEALTH WORKERS IN NUTRITION

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Guidelines for Training Community Health Workers in Nutrition

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CONTENTS

Introduction 3

Module 1 — Getting to know the community and its needs 9

Module 2 — Measuring and monitoring the growth and nutrition of children 21

Module 3 — Breast-feeding 45

Module 4 — Diets for young children 63

Module 5 — Nutrition of the mother 73

Module 6 — Identification, management and prevention of common nutritional deficiencies 81

Module 7 — Diarrhoea and nutrition 99

Module 8 — Nutrition and infection 115

Module 9 — Nutrition and the community: getting started 129

Annex. Training hints 139

The trainers of community health workers for whom this book is primarily intended will probably already know the technical information on nutrition that it contains. Many of them, however, will not be familiar with the task-oriented approach that is adopted here. It is hoped that they will find this book useful either for preparing and carrying out a new nutrition training plan or for revising an existing plan to make it more practical and effective. Supervisors will find much in these pages to help them in the guidance and on-the-job training of community health workers under their supervision. The community health worker who has completed training based on this manual can also use it for reference and as a continuing guide to help her in her daily contacts with families. Finally, this book explains the basic nutrition tasks of the community health worker to other health and development workers in the community. It will serve them all as a guide in determining the areas in which they can work together to solve the nutritional, health and related problems that are their common concern.

A number of the illustrations in this volume reproduce or are based on illustrations in King, M. et al., Primary child care. A manual for health workers, Oxford, Oxford University Press, 1978, by kind permission of the publishers.

INTRODUCTION

Malnutrition

In most developing countries the majority of the population - the rural population especially - do not receive even the most basic health care and are malnourished from their very first days of life. The malnutrition usually stems from poverty and from ignorance of what are the right foods to eat. At the same time it increases the problems caused by the lack of health care because it weakens the body's defences against disease and makes illness and infections worse. A population weakened by malnutrition and disease cannot have the energy to overcome its poverty and is helpless to improve its own condition. Malnutrition, therefore, is not merely one of the greatest public health problems in the world today. It is also both a result and a cause of social and economic underdevelopment.

The root of the problem is in the home: to solve it, the family must be helped to learn better habits of nutrition and must be served by better health care. In an increasing number of countries, the person responsible for health care at the family level is the community health worker. In a primary health care system, she[1] occupies a key position, being the first point of contact that the family has with the health services. It is she who first treats the members of the family for their illnesses and who gives them advice on health matters. It is essential, therefore, that she should be properly trained to deal with the most prevalent health problem she is likely to meet - namely, malnutrition.

The community health worker's nutrition tasks

There are many tasks she will have to perform to overcome the malnutrition problem. Studies conducted in recent years by the World Health Organization and by others have shown that the majority of these tasks are common to community work in most developing countries. They can be grouped into eight main categories - namely:

- Getting to know the community needs
- Measuring and monitoring the growth and nutrition of children

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[1] The community health worker is referred to as "she" in this book because in most developing countries women usually occupy this position and are responsible for health work concerned with maternal and child care and nutrition. Male community workers are usually responsible for community development work such as food production, water supply and sanitation.

- o Breast-feeding
- o Diets for young children
- o Nutrition of the mother
- o The identification, management and prevention of nutritional deficiencies
- o Diarrhoea and nutrition
- o Nutrition and infection.

The need for a change in nutrition training

However, the training in nutrition that the community health worker receives commonly suffers from three main defects.

First, because nutrition trainers are often highly trained professionals from different disciplines (doctors, nutritionists, or nurses, for example), they naturally tend to teach what they themselves had learnt during their own professional training. This often leads to the training being biased towards the profession of the trainer and being aimed at too high a level of learning. A physician, for instance, may attempt to make his trainees learn details of the clinical aspects of nutrition that a community health worker does not really need to know and may not be able to understand. Moreover, the training frequently relies too much on learning technical information from textbooks and not enough on learning how to deal with practical problems of nutrition.

Secondly, the training is based mainly on lectures, during which the trainees remain passive listeners. There is not a to-and-fro exchange of ideas between them and the lecturer that would help them remember the information he is attempting to pass on.

Thirdly, there is a lack of simple training material designed specifically to teach community health workers how to perform certain tasks. Most manuals on nutrition concentrate on technical aspects of the subject. They do not specify the tasks the trainees will be expected to perform. They do not explain how the training should be conducted so that the trainees gain the necessary competence. And they do not indicate how to check whether the trainees have in fact gained that competence.

The purpose of these guildelines

The guidelines presented here have been prepared to help trainers overcome these problems. They are designed to train a community health worker to improve nutrition in her area by learning in a practical way the most important things she will need to know and do.

They are based on the following main considerations:

1. The training should be directed to the performance of specific tasks. These are the activities that the community health worker will need to carry

out in order to deal with the nutritional problems in her area. The performance of these tasks requires certain skills; and these skills in turn have to be based on certain knowledge. For instance, if a child has diarrhoea the community health worker needs the knowledge that the loss of water and salts from the body is dangerous and that this loss must be replaced by a special solution of salts and sugar in water. She also needs to be able to prepare the solution and feed it to the child.

2. The community health worker should be trained to perform a limited number of practical tasks for the improvement of health and nutrition. The amount of theoretical information given during the training can be restricted to the minimum necessary.

3. To be fully effective training requires the maximum participation by the trainees themselves. This can be achieved by what is called the "teaching-learning" method. It differs from conventional teaching in that it is more concerned with stimulating a trainee to acquire the knowledge she needs to perform a task successfully than with simply transferring knowledge from a teacher to a pupil. Using the modules in this book, the trainee will participate actively in her own training. There is not a set pattern or a set content for each lesson. Through an exchange of ideas and information between trainer and trainees, the trainer can adjust each lesson to the knowledge and experience of the trainees and to how much they have learnt in the previous lessons. It is often found that, with this approach, the speed with which trainees learn their skills increases as their experience grows. As a result, they can be trained faster as well as better than by conventional methods.

Each module is concerned with a group of tasks on one particular topic (diarrhoea or breast-feeding, for instance) and is made up of three parts. These are: the learning objectives, which set out what the trainees should be able to do when they have finished the work; the training content, which is the material to be learnt; and exercises, by which the trainees acquire and practice their skills.

4. It is very important for the trainees to have a strong motivation to learn their job and to serve the community; in other words, they should feel that they want to do so. This should be taken into account when selecting persons for training as community health workers. During the training period, the trainer should try to make the motivation even stronger, both to encourage the trainees to learn better and to help them to do their community work effectively. The more effectively their work is done, the more they will feel it is worth while, and the more strongly they will be motivated. Good supervision is important to encourage this feeling of satisfaction at doing a useful job well.

5. As far as possible, the training should be given near the community in which a trainee will be working later. It is much easier for her to understand the theory if it can be related to the actual conditions she will meet.

6. The trainees will have to learn certain knowledge and skills that may not seem to be directly related to the technical aspects of nutrition. This is because the whole community must participate as much as possible if

activities or programmes to improve nutrition are to be successful. The community health worker will need, for instance, to be able to motivate and organize community groups, to show leadership, and to analyse problems before proposing solutions for them.

7. The duration of the training will depend upon the educational background of the trainees, upon how many tasks they will be expected to perform and upon how complicated these are.

8. Training is not completed in a set period of time or at the end of the formal training course. The supervisor will need to judge how effectively a community health worker is doing her job, to see what further training she may need, and to help her to acquire that training. This should be an encouragement to the community health worker to improve the service she can give.

How trainers may use these guidelines

Trainers who wish to develop nutrition training plans for community health workers for the first time may do so by following the steps listed in the table on the opposite page. They will also find useful information in the Annex at the end of this book. For the training itself they may use the modules given in the main part of the book. Depending on the situation in the communities that concern them and on the qualifications of their trainees, one or more of the modules may need to be adapted to suit local conditions, customs and resources. The length of the training period can be set when this has been done.

Trainers who are already following their own training plans may use the steps listed on the opposite page to review their plans and amend them to make them more practical. Special attention should be paid to making a clear statement of the learning objectives so that both the trainers and the trainees are sure of what is expected of them. The modules, with their exercises, may be used as they are if they are suited to the conditions in the communities to be served, or they may need to be modified. Again, the Annex contains information that these trainers should find helpful.

Trainers should always do the exercises themselves before asking the trainees to do so. This will show them whether the exercises are suited to local conditions and will be helpful for adapting them or for developing additional exercises.

STEPS IN THE PREPARATION OF A NUTRITION TRAINING PLAN FOR COMMUNITY HEALTH WORKERS

1. Identify the nutrition needs and problems of the community that have to be met by the community health worker.

2. Define the major tasks of functions to be performed by the community health worker to meet those needs. This is the first stage of "task analysis", which means analysing and specifying what a community health worker does in her job.

3. Divide up each major task into lesser specific tasks or activities for the community health worker. This is the second stage of task analysis.

4. Indicate the knowledge and skills need to perform each of these tasks. This is the third stage of task analysis. This step enables the trainer to decide what are the most important things to teach in a particular community in order to train the most useful community health worker in the shortest period of time.

5. Formulate the learning objectives in terms of what the trainee should be able to do after completing her training. Anyone who reads the learning objectives should be able to know exactly what is the desired outcome of the training. This makes it easier to decide upon ways of achieving the objectives that have been set. It also enables each trainer to be clear about what other trainers have set out to achieve and to work in cooperation with them on training programmes. The objectives help the trainers to organize the training and to evaluate its effectiveness.

6. Formulate lessons with a clearly defined training content and exercises suited to the learning objectives. Active participation by the trainees increases their opportunities to acquire knowledge and apply it and to practise the skills they are learning. Certain basic teaching principles are helpful here:

   - Develop positive attitudes among the trainees by specifying in the training content the importance of a particular piece of knowledge or skill and explain why it is included in the training.
   - Present new knowledge or skills in short steps. After each step allow the trainees to ask questions about what has been presented. Check how well they have understood and go back over points that are not clear to them.
   - Provide the opportunity to practise the skills described in the learning objectives and inform the trainees after each activity whether they are doing it correctly.

7. Formulate evaluation or testing procedures to check how well the trainees can do the tasks expected of them. This procedure can be worked out together with the exercises described in step 6. Give the trainees the opportunity to practise a task before testing how well they can do it.

MODULE 1

GETTING TO KNOW THE COMMUNITY AND ITS NEEDS

1. LEARNING OBJECTIVES

After studying this chapter, taking part in discussions, and doing the exercises and activities, a community health worker should be able to:

o Collect information which will help to show what are the nutritional and nutrition-related problems and needs of the community.

o Decide which social groups, families, and individuals are at special risk of nutritional problems. These people are sometimes referred to as the "target population" because nutrition activities will be aimed particularly at them.

o Identify the nutrition problems, and, with the help of the supervisor, plan the actions or tasks to deal with these problems.

o Identify people and the organizations in the community that can help with the nutrition problems and prepare a list of what they can do, how they can help, and how to build an understanding with them. People who can help in various ways are sometimes called "resource persons".

o Decide which people are seriously ill and should be referred to the nearest health centre or medical supervisor.

2. TRAINING CONTENT

2.1 Why should we know the community?

In order to help a community we must know what are its *"actual"* needs and what are its *"felt"* needs with respect to nutrition, The things a community wants, or thinks it needs (its "felt needs"), may not always be the same as the "actual needs" - the things that are really necessary. If we do not know the hopes and desires of a community it may be difficult to help the people. The "felt" needs and the "actual" nutritional needs should both be satisfied if a programme to improve nutrition is to succeed.

Services which are intended to help people will be most effective when the people themselves help in their planning and implementation. But first the people must realize that there are solutions to their problems. They must also have confidence in their own capabilities. If they feel that a programme is being forced on them, they may oppose it and it will fail.

If you live in a community you may think you already know all about it. But to help a community to help itself, it is necessary to study it carefully and in detail. It is essential to know the people - all of them, not simply the ones who live near you or who appear to be important. It is essential to know their problems and what causes them. It is essential to know what people and what organizations can help in different ways. This requires a systematic study and the desire to understand and help people. The sections below consider the different things the community health worker needs to learn about a community.

2.2 Information that will help to find out the nutritional needs of the Community

Good nutrition and good health go together. Malnutrition is a sign of poor health. Small children grow rapidly; therefore, their nutritional needs are great. A child who does not get enough food or the right mixture of food stops growing or grows slowly. Growth failure is the first and most important sign of malnutrition. The growth of children is an important indicator of their nutrition status; it is considered in detail in Module 2.

One can learn about the nutritional problems of a community by finding out which children fail to grow properly and why. This can be done by carrying out a nutrition survey of all the children in the community. Every child who is below the age of 5 is weighed and, if possible, his height is also measured, and this information is related to the child's age. This procedure will be further described in Module 2.

With this information it is possible to divide the children into three categories:

1. well nourished
2. moderately malnourished; and
3. severely malnourished

It is also useful to record the following information about each child.

- Sex (male or female)
- Family's community group (religion, class, caste, etc.)
- Size of the family. How many children have been born in the family?
- Health status of the family. Have any children in the family died? Is anyone in the family ill?
- Occupation of parents. What work does each one do?
- Child's food. What milk (breast milk or other) does the child drink? What foods and how many times a day does the child eat?
- Child's health. Did the child have any illness? Is he well now?
- Immunizations. Has the child been immunized? If yes, against what disease or diseases and at what age?

On the basis of this information it will be possible to see which factors are associated with growth failure and malnutrition. This is considered in greater detail below.

In addition to the information collected during a nutrition survey of children, there are some other factors that relate to nutrition. The community health worker must observe the community and answer questions such as these:

- How poor or how rich are the different families in the community?
- Who owns the land in the community? (This applies particularly to rural communities).
- What are the patterns of work of the people?
- Is clean water readily available for drinking and washing?
- What are the community's beliefs and practices about food in disease and in health?
- What is the influence of seasonal changes on the availability of clean water and food, and on the health and economic status of the community?

This information can be obtained by careful observation, informal discussions with community members, and planned interviews. A detailed discussion of how these questions relate to nutrition follows.

The economic status of a family (whether it is rich or poor) is perhaps the most important factor affecting nutrition. It relates to things such as the ability to buy food or land or animals which produce food. One can tell the economic status of people by looking at their houses, furniture, clothes, etc. Such observation is important because people often do not like to discuss their financial matters. Education is another important factor affecting nutrition. The level of education of an individual can often be judged by talking to him. Education also depends on the family's economic status.

Since much of the primary health care work is done in rural communities where the majority of the population are often farmers, the question of who owns the land becomes important in considering the nutritional problems. Often the landowners do not live in the community. Most farmers in such communities are landless labourers who have no say in what crops should be grown. The land-owners may prefer cash crops (sugarcane, tobacco, coffee, etc.) to food crops (wheat, rice, maize, etc.) because they bring in more money. This considerably reduces the amount of food that could be available in the community.

In communities where the people own much of the land themselves, the following questions need to be considered in judging the community's nutrition status. Is the land that the family owns big enough to supply the family's food needs? Is the land irrigated? Is the irrigation water safe for the family's health?

In communities where women also work, the following questions need to be asked. Can women take their very young children with them to work so that they can breast-feed them during the day? If the children have to stay back, who looks after them? At what times of day or periods of the year do the parents have more time or less time to look after their children?

Seasonal fluctuations in the availability of work, food, and water are common in some communities. Often different seasons are associated with epidemics of diseases such as diarrhoea, malaria, measles, and worms.

Information about the kind and amount of food available in a community is essential in considering nutritional problems. In many village communities small farmers and farm labourers have staple food grains which last only 4-5 months after harvest. After this they eat tuber roots, cereal gruels, and purchased food. Some families are partly starved as a result of this. In some areas, too, certain foods are seasonal for example, fish, milk, beans, fruit. When cash crops are grown instead of food crops not only is the food production reduced but money may also be diverted to alcoholic drinks and to nutritionally inferior processed foods and drinks that cause nutritional problems. Regular home visits and market visits during different seasons of the year give information about the availability and cost of foods. The "hungry season" is a regular occurrence in many communities.

The methods of food preparation and dietary practices are important. How and how often is the food prepared and for how long is it stored? How many meals are eaten each day, and are the children given any snacks? Are any special foods prepared for children? Within the family who eats what, who is served first, are the children fed separately and from their own plates? These factors influence how much nourishment a young child receives.

There are important beliefs associated with food in all communities. These traditions and habits have a strong influence on what food is eaten. Some foods are of high prestige, others of low prestige, and some are for special occasions. Foods are considered to be "hot" or "cold" in many countries because they are believed to heat or cool the body. Certain foods are forbidden in some families (e.g., animal foods among vegetarians). At different ages and stages of life particular foods are considered to be harmful; for example, certain fruits are believed to induce abortions in pregnant women, and other foods are thought to influence the development of the child in the uterus. The community health worker must know what people in the community believe about different foods. Only then will she be able to advise them appropriately.

In all communities there will be people who are always ready to help. Their influence should be put to good use. Some people have special skills of art, music, poetry or drama which can be used to spread messages about good nutrition habits. Some people in the community may have fears about health and nutrition programmes, especially when surveys are done and enquiries made about people's way of life and property. Excessive use of alcohol can be a major problem in some areas. The community health worker must know about all these matters and should be sensitive to people's feelings.

The methods commonly used in the collection of information are: records review, planned interviews using questionnaires, informal discussion, and observation. Factors important in the collection of information through surveys are briefly discussed in Annex 1 to these guidelines.

2.3 How to decide which social groups, families, and individuals are at special risk of nutritional problems

It is known that certain groups in the population are specially vulnerable to nutritional problems. These are children between the ages of 6 months and 3 years, and women who are pregnant or lactating. Families with pregnant mothers and young children can again be divided into groups at high and low risk by using information from the nutrition survey described earlier.

The following children in developing countries are known to be at risk of becoming malnourished.

(1) All infants who are not breast-fed.

(2) Infants with low birth-weights, below 2.5 kg.

(3) Twin or multiple births.

(4) Children high in the birth order, i.e., 5th, 6th or subsequent children in large families.

(5) Children in a family in which an older brother or sister died in the first year after birth.

(6) Children with illnesses, particularly measles, whooping cough, or repeated diarrhoea, especially in the early months of life.

(7) Children of poor families.

(8) Orphans or children with only one parent.

(9) Children with a growth curve which does not slope upwards, as explained in Module 2.

(10) Children who are cared for by older children.

(11) Children with congenital defects, e.g., cleft-palate.

Certain groups of women are also at risk of malnutrition. This can affect not only their own health and capacity to work, but also that of their children. They are:

(1) Women who are wasted or underweight at the beginning of a pregnancy.

(2) Women who gain too little weight (less than 6 kg) during the course of pregnancy.

(3) Women who have too short a period (less than 6 months) between the end of one pregnancy and the beginning of the next pregnancy.

(4) Women who become pregnant before the age of 15 years.

(5) Women who have had more than five children.

(6) Women who have previously given birth to babies with a low birth-weight (less than 2.5 kg).

There may be special risk factors for women and children among different groups in the community. Hence, it is important to observe carefully all social groups.

Many nutrition programmes do not have enough resources: trained personnel or money. Therefore it is essential to concentrate the nutrition activities on those at greatest risk. It is known that concentrating in this way on a relatively small group of children and mothers can make a significant difference to the number of malnourished children and the number of deaths from malnutrition in a community.

2.4 How to identify nutrition problems and plan appropriate action

Once the information on nutrition in the community has been gathered, the community health worker and supervisor must analyse it. The main causes of malnutrition can be found by examining the social, economic, and health

statuses of the high-risk groups. The problems of the community will be many and varied - from poverty to bad feeding habits - and so will the solutions to these problems. Health workers can do relatively little about poverty; probably the most they can do is to give their full support to community development programmes, and help poor families to use whatever they have more efficiently. But in the case of problems related to bad feeding practices, the community health worker can and should be able to do a lot.

Problems related to poor feeding practices should be listed in the order of their importance, and of how common they are in the community. This should be done in consultation with supervisors and others who have experience in treating and preventing malnutrition and who also know the community well. Each problem should be considered separately to see if a solution is possible. A list of *priority solutions* can then be made. Selection of priority solutions will depend on the answers to the following questions.

(1) How easily can the activities be undertaken by the community health worker and community? How manageable are these activities?

(2) Are the necessary resources readily available, or can they be easily mobilized?

(3) How important is the solution to the community? (Ask the opinion of the community leaders.)

(4) How important is the solution to the community health worker?

(5) How frequent (i.e., common or prevalent) is the problem to be solved?

For each selected solution the community health worker specifies the tasks she has to perform and the activities the community will participate in. She also identifies the resources she needs to carry the selected solutions. Finally, the plan of action is completed by specifying the schedule of tasks and activities. The community health worker should give priority to the problems that she can do something about, even if they do not seem very important by comparison with other problems in the community. Overcoming poverty may be the biggest problem for instance, and giving nutrition advice to the community may appear much less important, but it is something practical that the community health worker can actually do. The priority list should be made up of tasks that are both important and feasible.

2.5 How to get to know and work with people and organizations that can help with nutritional problems

When finding out about the nutritional needs of the community the community health worker will meet many people who can help in solving nutritional problems. Such people will include *"formal" leaders*: the local religious heads, educated people like schoolteachers, postmasters, local doctors, landowners, heads of small industries, heads of women's or farmers' clubs, civil servants and political leaders. It is also important to contact the *"informal" leaders*. These are people who do not hold any formal position in

the community but are nevertheless influential and helpful. These people must be told about the importance of nutritional problems. They must understand how they can help, and their cooperation must be won. Their support will be essential in influencing the community.

The community health worker should seek the help of any government or private organizations working in the community. These will mostly include community development programmes and national nutrition supplementation programmes. The community health worker should have close contact with the schools in the community.

The staff of what are often thought of as the "official" local health services are particularly useful. They support and help to train the community health workers. In addition, if the community health worker is not herself a traditional birth attendant or traditional healer, she should seek the cooperation of such people. They know the people and have the confidence of the community, and they have much knowledge about common ailments and have provided health care for years.

There may also be programmes to increase the food production in the community, e.g., poultry and dairy development programmes, and those for improved fish ponds and home gardens. The community health worker should work closely with these. Other programmes which help indirectly include programmes for improved sanitation and water supply, and those for the control of infectious diseases and for family planning.

Getting to know people is the first step in working together with them. *Some useful steps on how to know and work with the community are given below.*

- With the assistance of the head of the community prepare a list (if one is not already available) of the organizations, formal and informal leaders, and personnel of both government and private organizations. Against each name write out their functions. It will be also useful to indicate what resource (finance or special skill or knowledge) each of them represents.
- Find out when the highest community body (this may be the community council or some other equivalent body) meets regularly. With the help of the village head, arrange to attend one of their meetings. If the community health worker has come from outside the community, this gives her an opportunity to be formally introduced to its leaders. It also provides an opportunity for her to explain her purpose and role in the community, and to present the findings (i.e., problems and solutions) of her nutritional survey. In this way she can learn the reactions of the leaders and seek their support. On this important occasion, she may be accompanied by her supervisor.

  If there is no such meeting, the community health worker arranges for individual meetings with the community leaders and

personnel of community development organizations for the same purpose. An alternative and faster step is to be introduced formally to the people by the village head through a community meeting or assembly.

- Arrange for periodic exchange of information between the community health worker and the community. This can be done through periodic meetings with community leaders, and personnel of community development organizations. Such meetings also provide an occasion for discussing the progress of the work of the community health worker, the problems encountered, and the results expected. It is important to make the community feel that the programme belongs to it.

2.6 Deciding which people are seriously ill and should be referred to the health services

Some patients, especially small children, may quickly become seriously ill and die. These "high-risk" patients should be referred at once to the medical supervisor or sent to the nearest health centre. Some danger signs of illness will be described in Modules 6, 7 and 8.

This is a list of some high-risk patients who should be referred immediately to the nearest health centre:

- Small newborn infants who weigh less than 2.5 kg.
- Infants or young children who lose weight during 3 successive months in spite of regular advice to the parents on what to feed the child.
- Children with acute diarrhoea who do not improve with the special fluid within 1-2 days, and those with signs and symptoms of dehydration.
- Severely malnourished children with other complications like fever, cough and rapid distressed breathing.
- Very anaemic (pale) women who are very thin or who have swollen legs.

EXERCISE 3.1 The food pathway - a problem analysis exercise

Ask all trainees to describe the pathway in the community between the production of food and its consumption by man (i.e., preparing ground for cultivation - planting - weeding - irrigating - harvesting - transporting - storing - selling - cooking - serving - eating - digesting).

This path will have many local variations. In some communities food transport and food shops may be unknown.

Next, ask trainees to describe the different problems that can occur in the food path. Discuss with the trainees how the problems can affect the nutrition and health status of a community and how they can possibly be overcome.

EXERCISE 3.2 Information collection and analysis

In this exercise trainees can work in groups of 2 to 5. Each group plans a simple nutritional survey, stating and preparing the following:

1. The purpose of the survey

2. Specific information to be collected

3. How the information will be collected

4. Questionnaires or special forms to be used in the survey.

If possible, the groups should use different methods for collecting the information (see page 13).

Ask each group to carry out the prepared survey plan and put together the collected information. Each group should then present its findings and an analysis of the collected information. Now discuss the problems encountered in collecting and interpreting the information. Suggest solutions that could have been undertaken. Ask the trainees to discuss what they consider to be the advantages and disadvantages of the different methods used in the surveys.

EXERCISE 3.3 Preparing a plan of action

In this exercise the trainees should work in pairs. From the information collected in Exercise 3.2 ask the trainees to select one nutritional problem in the community and write out answers to the following questions:

1. What is the problem? Why was it selected? What factors caused it?

2. Which group in the community is the target population? Give a brief account of its social and economic conditions.

3. How can the problem be solved?

- What action has to be taken?

- What will be the result of taking that action?

- What resources are needed to take that action (what manpower, money, materials, space, time)?

- What is the timetable for the different steps in the plan of action?

- When and how is the progress of the action reviewed?

Each pair of trainees presents its plan of action. Discuss the advantages and disadvantages of each solution and how these could be improved.

MODULE 2

MEASURING AND MONITORING THE GROWTH AND NUTRITION OF CHILDREN

1. LEARNING OBJECTIVES

After studying this chapter, taking part in discussions, and doing the exercises and activities, a community health worker should be able to:

o Explain the relationship between growth, development, and nutrition.

o Find out the age of a child by using a local-events calendar.

o Weigh a child with an accuracy of within 100 grams.

o Record the weight of a child on a growth chart.

o Explain to the mother the features of the growth chart.

o Interpret a child's growth pattern from the weight changes recorded.

2. TRAINING CONTENT

2.1 What is the relationship between nutrition, growth, and development?

Food is needed for growth, physical activities, good health, and the maintenance of life.

Growth is the gradual increase in size of the body and its organs. *Development* is the increase in the number of skills performed by the body, including the brain, and in the performance of those skills. Growth and development are fundamental features of children. If a child is growing well he is probably healthy and adequately nourished. If a child is not growing well, there must be some reason for this. He may have some illness or he may not be receiving adequate nourishment (food). Months before a child has obvious signs of malnutrition he will have stopped growing. *Measuring a child's growth is one way of measuring his health and the quality of his nutrition.*

Growth is measured in different ways. Body weight is the simplest measurement, and in children change in weight is the most reliable indicator of growth. When a baby is born he weighs about 3 kg. If he grows well he will weigh about 6 kg by 5 months of age and about 9 kg by one year of age. This means that healthy babies double their birth-weight in 5 months and treble their birth-weight by 12 months. After that the increase in weight is not so fast - only about 2 kg per year.

Height (or length in the case of infants) is another measure of growth. At birth a baby is about 50 cm long. By 1 year of age he should be about 72 cm long. Height is a particularly useful indicator of growth among older children. If a child is quite long or tall, but his weight is low, he is thin or wasted. A malnourished child may also be short or stunted.

BY MEASURING WEIGHT AND GROWTH WE ARE MEASURING HEALTH

A baby's head grows very quickly, especially in the first year of life. This is because the brain is growing very rapidly. Development, or the increase of skills, mainly depends on the brain and the nervous system. The growth and development of the brain requires adequate nutrition, just like other parts of the body. When a baby is born it can do very little for itself. Gradually he develops and is able to move his body in the way he wants and can do simple things. Special skills like talking develop later. It is useful to know the ages when most children can do some simple things. These are used as markers of development and are sometimes called *"milestones of development"*.

Milestones of development	Age	
	Average baby	Nearly all babies
Able to sit without support	6½ months	9 months
Able to walk 10 steps without support	12 months	18 months
Able to say single words	15 months	21 months
Able to speak short phrases	23 months	36 months

Factors other than nutrition can also influence development. Children only develop skills if they are given the opportunity. Stimulation, particularly the presence of people who take an interest and talk to them, helps children to develop. Children left alone and given nothing to play with will develop slowly. There are only small differences in the rate of growth and development in different races. Race does not have an important influence on growth and development compared with adequate nutrition and stimulation.

In children normal growth and development are signs of good health and nutrition. One of the best ways to measure a child's health is to measure growth, and one of the easiest ways of measuring growth is to weigh a child regularly and to compare the weight with the standard weight for that age.

2.2 How to find out the age of a child if the mother does not know

There are two important factors in measuring growth - weight and age. It is very important, therefore, to know the age of a child correctly. Often mothers do not remember the dates of births of their children. In such cases the community health worker can estimate the age of a child by asking the mother certain questions and by using a local-events calender.

The first and the simplest way of finding out the age of a child is to look up the local official register of births, baptismal certificate book, or similar record. Often mothers forget or are not aware of the existence of such records.

If the child is not registered or if no such records exist, the community health worker should first try to find out the year of birth of the child. This can be done by asking the mother if her child was born a few months before or after the birth of another child in the neighbourhood. The community health worker should then find out if the date of birth of that child is known. If the mother of the second child knows the date of birth of her child, the year of birth of the first child can be easily estimated. The year of birth can be easily determined in this way for children up to 4 years of age. In the case of older children the year of birth becomes difficult to estimate correctly; however, with older children it is not so important to be absolutely accurate.

The next step is to determine the month of birth. This can be done by the use of a *local-events calendar*. A local-events calendar shows all the dates on which important events took place during a past 3-5 year period. It may show the different seasons, months, phases of the moon, local festivals and events in the agricultural cycle. (Fig.1). National and local occurrences of importance are also marked on it; these include storms and cyclones, political elections, the opening of nearby roads, cinemas, shops, etc. Each community health worker should make his own local-events calendar.

FIG. 1 AN EXAMPLE OF A LOCAL-EVENTS CALENDAR USED IN INDIA

बच्चा-बच्चा क्लिनिक के लिए देसी कैलेंडर
Indigenous Calendar for Mother and Child Clinics

Season Crops	CALENDAR Hindi	CALENDAR Western	Festival & Local Events	1975	1976	1977	1978	1979	1980	1981
WINTER	पौष	DEC JAN	Amavasya अमावस्या	12 Jan	1 Jan	...	9 Jan	...	...	6 Jan
			Lohri लोहडी	13 Jan	13 Jan	13 Jan	13 Jan	13 Jan	13 Jan	13 Jan
			Guru Gobind Singh B'day गुरु गोबिंद सिंह का जन्म दिन	19 Jan	8 Jan	27 Jan	15 Jan	4 Jan	25 Dec	12 Jan
			Republic Day गणतंत्र दिवस	26 Jan	26 Jan	26 Jan	26 Jan	26 Jan	26 Jan	26 Jan
			Purnima पूर्णिमा	27 Jan	17 Jan	5 Jan	24 Jan	13 Jan	2 Jan	20 Jan
	माघ	JAN FEB	Amavasya अमावस्या	11 Feb	31 Jan	19 Jan	7 Feb	28 Jan	17 Jan	4 Feb
			Basant Panchami वसंत पंचमी	16 Feb	5 Feb	24 Jan	12 Feb	1 Feb	22 Jan	9 Feb
			Purnima पूर्णिमा	25 Feb	15 Feb	4 Feb	22 Feb	11 Feb	1 Feb	18 Feb
SPRING	फाल्गुन	FEB MAR	Shiv Ratri शिव रात्रि	11 Mar	28 Feb	16 Feb	7 Mar	25 Feb	14 Feb	5 Mar
			Amavasya अमावस्या	12 Mar	29 Feb	18 Feb	9 Mar	26 Feb	26 Feb	6 Mar
			Holi (PURNIMA) होली (पूर्णिमा)	27 Mar	16 Mar	5 Mar	24 Mar	13 Mar	1 Mar	20 Mar
			Dhulendi (HOLA) धुलेंडी	28 Mar	17 Mar	6 Mar	25 Mar	14 Mar	2 Mar	21 Mar
	चैत्र	MAR APR	Amavasya अमावस्या	11 Apr	30 Apr	19 Mar	7 Apr	28 Mar	16 Mar	4 Apr
			Good Friday गुड फ्राईडे	28 Mar	16 Apr	8 Apr	24 Apr	13 Apr	4 Apr	17 Apr
			Ram Navmi राम नवमी	20 Apr	9 Apr	19 Mar	16 Apr	5 Apr	24 Mar	31 Mar
			Mahavir Jayanti महावीर जयंती	24 Apr	12 Apr	2 Apr	21 Apr	10 Apr	29 Mar	12 April
			Purnima पूर्णिमा	25 Apr	14 Apr	4 Apr	23 Apr	12 Apr	31 Mar	19 Apr
Harvest SUMMER	वैसाख	APR MAY	Baisakhi वैसाखी	13 Apr	13 Apr	13 Apr	13 Apr	14 Apr	13 Apr	13 Apr
			Amavasya अमावस्या	11 May	29 Apr	18 Apr	7 May	26 Apr	15 Apr	4 May
			Budh Purnima बुद्ध पूर्णिमा	25 May	13 May	3 May	22 May	12 May	30 Apr	18 May
	ज्येष्ठ	MAY JUNE	Amavasya अमावस्या	9 Jun	28 May	18 May	5 Jun	26 May	14 May	2 Jun
			Guru Arjan Dev's Shahid Din गुरु अर्जन देव का शहीद दिन	13 Jun	2 Jun	23 May	10 Jun	30 May	18 May	
			Nirjala Akadashi निर्जला एकादशी	19 Jun	8 Jun	29 May	17 Jun	6 Jun	25 May	
			Purnima पूर्णिमा	23 Jun	12 Jun	1 Jun	20 Jun	10 Jun	29 May	17 Jun
	आषाढ़		Amavasya अमावस्या	...	...	16 Jun	...	24 Jun	12 Jun	
			Purnima पूर्णिमा	...	...	1 July	...	...	28 Jun	
RAINY Maize Bajra Sowing		JUNE JULY	Amavasya अमावस्या	9 July	27 Jun	16 July	5 July	24 July	12 July	1 July
			Teej तीज	25 July	4 July	19 July	7 Aug	27 July	13 July	
			Purnima पूर्णिमा	23 July	11 July	30 July	20 July	9 July	27 July	17 July
	श्रावण	JULY AUG	Amavasya अमावस्या	7 Aug	26 July	14 Aug	4 Aug	22 Aug	10 Aug	
			Independence Day स्वतंत्र दिवस	15 Aug	15 Aug	15 Aug	15 Aug	15 Aug	15 Aug	15 Aug
			Raksha Bandhan (Purnima) रक्षा बंधन (पूर्णिमा)	21 Aug	9 Aug	28 Aug	18 Aug	8 Aug	26 Aug	15 Aug
			Janam Ashtami जन्म अष्टमी	30 Aug	18 Aug	6 Sep	25 Aug	15 Aug.	1 Sep 2 Sep	23 Aug
	भाद्रपद	AUG SEP	Amavasya अमावस्या	5 Sep	25 Aug	13 Sep	2 Sep	21 Sep	9 Sep	29 Aug
			Anant Chaudasi अनंत चौदशी	19 Sep	7 Sep	26 Sep	15 Sep	5 Sep	23 Sep	
			Purnima पूर्णिमा	20 Sep	8 Sep	27 Sep	16 Sep	6 Sep	24 Sep	14 Sep
AUTUMN Wheat Sowing		SEP OCT	Amavasya अमावस्या	4 Oct	23 Sep	12 Oct	2 Oct	...	9 Oct	28 Sep
			Purnima पूर्णिमा	...	...	...	...	...	...	
			Gandhi Jayanti गांधी जयंती	2 Oct	2 Oct	2 Oct	2 Oct	2 Oct	2 Oct	2 Oct
			Sharad शरद	6 Oct	24 Sep	13 Oct	2 Oct	21 Sep	9 Oct	
			Navratri नवरात्री	13 Oct	1 Oct	19 Oct	10 Oct	30 Sep	18 Oct	
			Dassehra दशहरा	14 Oct	2 Oct	20 Oct	11 Oct	1 Oct	19 Oct	7 Oct
			Amavasya अमावस्या	...	....	...	...	...	...	
	कार्तिक	OCT NOV	Purnima (Maharishi Valmiki's B' day) महार्षी वाल्मिकी का जन्म दिन (पूर्णिमा)	20 Oct	8 Oct	26 Oct	16 Oct	5 Oct	23 Oct	13 Oct
			Divali (Amavasya) दीपावली (अमावस्या)	3 Nov	22 Oct	10 Nov	31 Oct	20 Oct	7 Nov	Oct 27
			Gobardhan Pooja गोवर्धन पूजा	4 Nov	23 Oct	11 Nov	1 Nov	21 Oct	8 Nov	
			Bhaiya Dooj भैय्या दूज	5 Nov	24 Oct	12 Nov	2 Nov	22 Oct	9 Nov	
			Guru Nanak's B'day (Purnima) गुरु नानक का जन्म दिन	18 Nov	6 Nov	25 Nov	14 Nov	4 Nov	22 Nov	11 Nov
WINTER	अग्रहायण	NOV DEC	Ganga Snan गंगा स्नान	18 Nov	6 Nov	25 Nov	14 Nov	4 Nov	22 Nov	
			Amavasya अमावस्या	2 Dec	21 Nov	11 Dec	30 Nov	19 Nov	7 Dec	26 Nov
			Purnima पूर्णिमा	18 Dec	6 Dec	25 Dec	14 Dec	3 Dec	21 Dec	11 Dec
			Guru Teg Bahadur's Shahid Din गुरु तेग बहादुर का शहीद दिन	7 Dec	25 Nov	14 Dec	4 Dec	24 Nov	10 Dec	
	पौष	DEC JAN	Christmas Day क्रिस्मस डे	25 Dec	25 Dec	25 Dec	25 Dec	25 Dec	25 Dec	25 Dec
			Amavasya अमावस्या	....	21 Dec	....	29 Dec	19 Dec	....	
MUSLIM HOLIDAYS			Muharram मोहर्रम	23 Jan	12 Jan	1 Jan 21 Dec	11 Dec	1 Dec	10 Nov	8 Nov
			Id-ul-Fittar (Ramzan Id) ईद-उल-फित्तर	7 Oct	29 Sep	16 Sep	5 Sep	25 Aug	13 Aug	
			Id-ul- Zuha (Bakri Id) ईद-उल-जूहा	14 Dec	2 Dec	22 Nov	12 Nov	1 Nov	20 Oct	9 Oct

Using a local-events calendar, the community health worker tries to remind the mother of things that will help her to remember the birth of her child. She should start with the seasons - "Was it the hot, the wet, or the cold season when your baby was born?" She then asks her about the months, the festivals, and events in that part of the year, for example, "Was your baby born before or after such and such a festival?" Gradually she narrows down the period until she can tell with some confidence in what month the child was born. This is possible for most small children, and it can be done quite quickly.

2.3 How to weigh a child accurately

A child's weight is a valuable measure of its health and nutrition. Weighing a child requires reliable equipment and a standard method to achieve accurate results.

There are two main types of weighing scale - beam balance scales and spring scales. A beam balance scale is usually accurate and reliable, but it is often heavy and expensive (Fig. 2). Scales of this kind are used in markets and shops in many countries and are therefore familiar. A spring scale on the other hand is quite cheap, fairly reliable, light, and easily carried. Such a scale has one hook above, to hang the scale from a beam or a branch of a tree, and one hook below from which hangs a sling or basket (for infants) a small chair, or pair of pants (for older children)(Fig. 3). The child is placed in the sling or basket, seated on the chair, or slipped into the pants as the case may be. It is important that the child feels secure and the mother does not mind her child being suspended in that way.

FIG. 2 TWO TYPES OF BEAM BALANCE

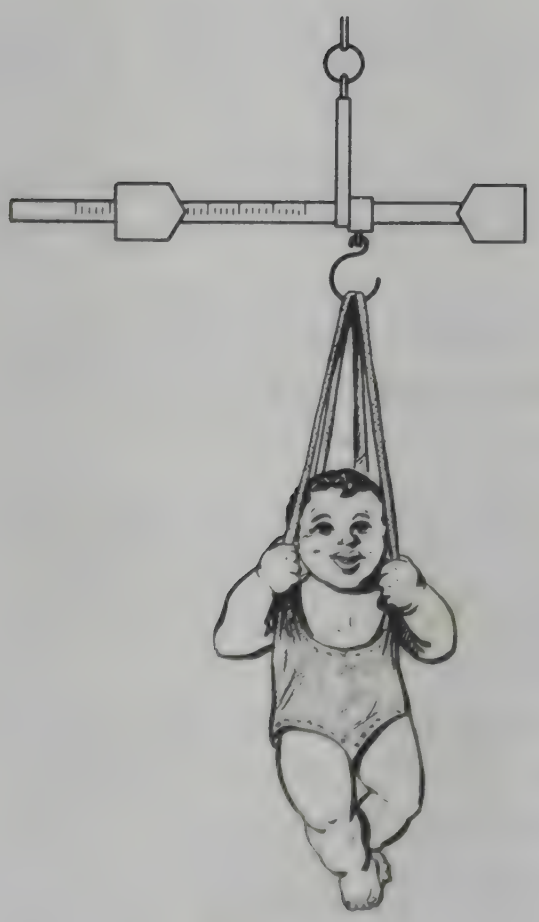


FIG. 3 A SPRING BALANCE

The most common spring scale (often called a Salter scale, although many other brand names exist) has a face or dial which looks like a clock. The weights are marked in kilograms around the dial. Some dials also show 100-gram divisions between kilograms, but the simplest scales only have kilograms marked by bold lines and 500 grams marked by thin lines. Such scales are convenient for workers with limited education because these lines are similar to those which are drawn on the most widely used growth charts (Fig. 4).

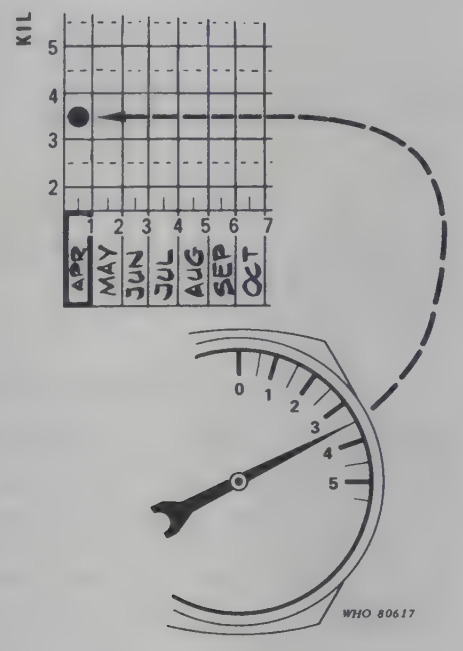


FIG. 4 THE MARKINGS ON THE FACE OF THE SPRING SCALE CORRESPOND TO THOSE ON THE GROWTH-CHART. THIS HELPS THE HEALTH WORKERS IN COMPLETING THE CHART, PARTICULARLY IF THEY ARE NOT USED TO DECIMAL SYSTEMS.

ACCURATE WEIGHING IS IMPORTANT
Follow these steps

Accurate weighing is important. A community health worker can learn how to weigh a child quite easily by following the instructions given below.

1. Hang up the scale securely, keeping the dial at eye-level so that the weight can be read easily.
2. Adjust the pointer to zero before placing the child in the sling or basket. Most scales have a knob or screw to make this adjustment.
3. Undress the child with the help of the mother. It is better to weigh the child naked if it is not too cold and if local customs permit.
4. Place the child in the sling or basket with the help of the mother. Ask the mother to stand nearby and to talk to the child. The mother should not hold the child and the child's feet should not touch the ground when the weight is being read.
5. Read the weight on the scale. If the child is struggling try to calm him with the help of the mother and when he stops moving read the weight quickly.
6. Write down the weight in figures, for instance, 3.5 kg.

2.4 The growth chart

A *growth chart* is basically a graph on which a child's weight is shown at different ages. There are many types of growth charts, but most of them have the same basic features. Fig. 5 shows a typical growth chart. It should be printed on card or paper sufficiently strong to be used for some years. The horizontal lines in this chart represent weight in kilograms. The vertical lines represent age in months. The weights are marked against each horizontal line on the left-hand side of the chart. The vertical lines form 12 columns for each year, corresponding to the months of the year. The month names can be written in the 12 boxes below the columns. The first box on the left-hand side of the chart is for the month of birth. This box has thick lines around it. The first column for each year also has a box with thick lines around it. This is to identify the beginning of each year of age. The year of birth is marked by the side of the box for the month of birth (i.e., the first box with thick lines around it).

Across the graph are printed two growth reference lines. These lines give the general direction of growth in healthy children. They are not the target for the growth of all children. If a child's weight is much below these growth reference lines there is some reason for concern, but it is the direction or angle of a child's own growth line that is much more significant than any weight recorded below the lower reference line.

Some other important features of the growth chart are given below:

- *Information about the child and family*. This is written on the back of the graph. The family address and name, the number of children, and their state of health are all recorded (Fig.6).

- *Immunizations*. There is a space for recording the different dates of immunizations. This also serves as a reminder of when the next immunizations are due.

- *Medical history*. It is convenient to write the illness suffered by the child on the side of the chart that shows the weight graph. The name of the disease can be written vertically in the month in which it occurs. This makes it easy to see how a disease such as measles seriously affects growth.

- *Additional information*. The same chart can also be used for recording additional information. For example, if a nutrition supplementation programme is being carried out and vitamin A is given every 6 months, a large A can be written at the bottom of the column of the month in which it was given. If food supplements or antimalarial drugs are given monthly a tick can be marked in the column for the appropriate month. Parents are advised to space their childen as this permits each child to have a maximum of care and nourishment; if they have been advised, or have accepted some form of contraception, it is good to record this on the chart as well.

- *Reasons for special care*. In Module 1 it was stated that certain social, economic and health factors are associated with a high risk of malnutrition. The chart has a space to record these factors; it is headed "Reasons for special care". This makes it easy to identify quickly the priority children.

FIG. 5 A GROWTH CHART

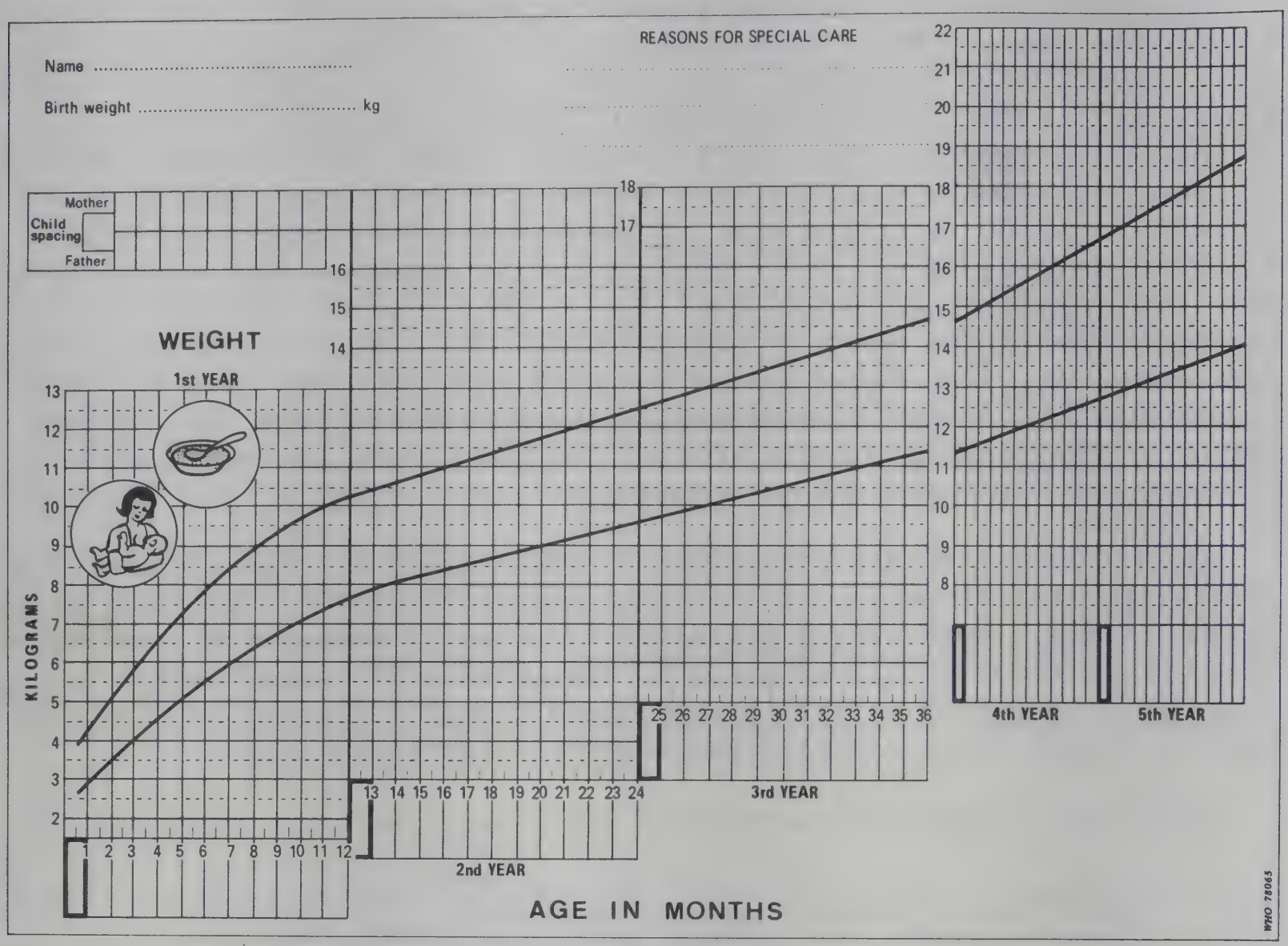


FIG. 6 THE BACK OF A GROWTH CHART
FOR THE COLLECTION OF INFORMATION ON THE CHILD AND THE FAMILY

APPOINTMENTS

GROWTH CHART

Health centre	Child's No.
Child's name	
Date first seen	Birthday
Mother's name	Registration No.
Father's name	Registration No.
Where the family lives (address)	

BROTHERS AND SISTERS

Year/birth	Boy/Girl	Remarks	Year/birth	Boy/Girl	Remarks

IMMUNIZATIONS

ANTI-TUBERCULOSIS (BCG)
Date of immunization _____

SMALLPOX
Date of immunization _____
Date of scar inspection _____
Date of reimmunization _____

WHOOPING COUGH, TETANUS AND DIPHTHERIA
Date of first injection _____
Date of second injection _____
Date of third injection _____

POLIOMYELITIS
Date of first immunization _____
Date of second immunization _____
Date of third immunization _____

MEASLES
Date of immunization _____

WHO 78065

If parents are made to understand the significance of the information on the chart, and then allowed to keep the chart themselves, they will feel more involved and responsible for the child's health care. This encourages community participation. It saves the time and space needed for storing the charts in a health centre. Also the charts can be taken with a child during visits outside the community (e.g., to the grandparents' home), or to any health centre. The charts should be put in plastic (polyethylene) covers to help parents keep them clean and dry. Another advantage of keeping the cards with the parents is that the community health worker does not have to carry them when making home visits. In the case of children who are at special risk however, the community health worker should keep duplicate growth charts at the health centre.

2.5 Recording weights on the growth chart

The weight of a child should be recorded on the chart according to the instructions given below.

1. Write the name, address, and other information about the child and the family on the back of the chart. It is important to do this at once to show whose record this is and to avoid recording one child's weight on another child's chart.

2. Write the month of birth in the box below the first vertical column (the first box which has thick lines around it). Near the box write the year of birth. This is September 1978 in the example shown in Fig. 7.

3. Note that there are 5 sets of 12 columns. Each set is for one year of the child's life. Beginning with the month of birth (see instruction 2), write out the following months of the year in the following boxes. When you reach January, write the year near that box exactly as you wrote the year of birth (see instruction 2) near the box for the month of birth.

4. Record the weight by putting a big dot on the line corresponding to that weight in kilograms. For example, if the weight of a child is 6 kg in a given month, find the horizontal line representing 6 kg and put a dot at the point on that line where it meets the column for the month in which the weight is being taken. This is January 1979 in the example shown in Fig. 7.

5. The position of the dot within a column can be adjusted. The purpose of this is to indicate when (early in the month, in the middle of the month, or late in the month) the child is being weighed. If the child is being weighed early in the month, put the dot towards the left side of the column. Put the dot in the middle of the column if the weight is being taken in the middle of the month. If the weight is being taken late in the month, put the dot towards the right side of the column.

FIG. 7 RECORDING THE WEIGHT ON A GROWTH CHART

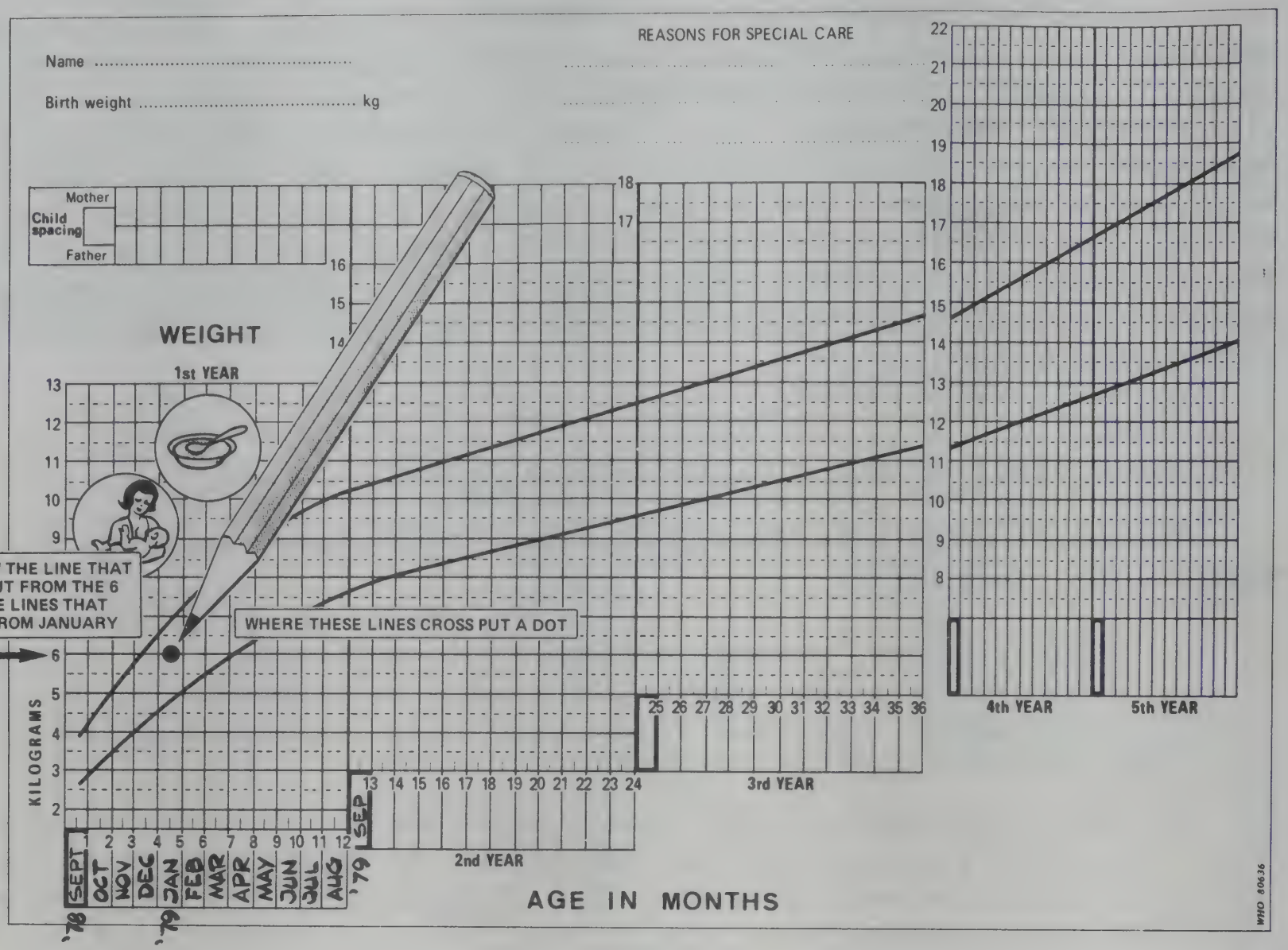
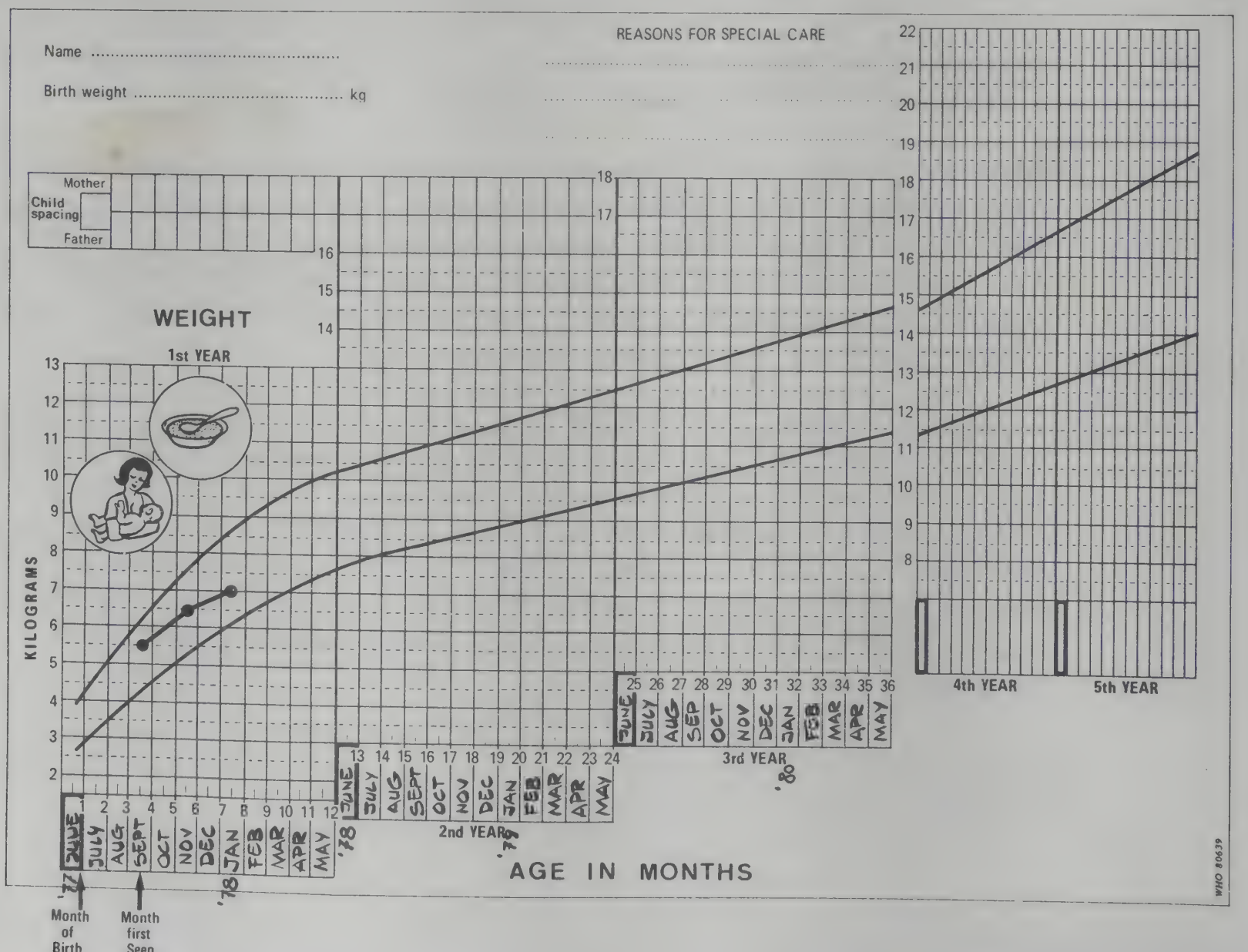


FIG. 8 AN EXAMPLE OF A GROWTH LINE PLOTTED ON THREE WEIGHT MEASUREMENTS



The above instructions should be followed each time you record the weight on a chart. An example of a weight-chart showing 3 weights of a child taken on 3 different occasions is shown in Fig. 8. Notice that the three weight dots are joined by a line. *This is the line of growth*. It is very important.

Notice too, that the chart in Fig. 8 is for a different child from the one in Fig. 7. The child in Fig. 8 was first seen and weighed in September 1977 by the community health worker, who questioned the mother about when the child was born. The month of birth (June 1977) was written in the first box on the chart and the first weight record was placed in the fourth column (September).

> INCREASE IN WEIGHT WITH AGE IS MORE IMPORTANT THAN WEIGHT ON ANY ONE OCCASION

2.6 How to interpret the growth line

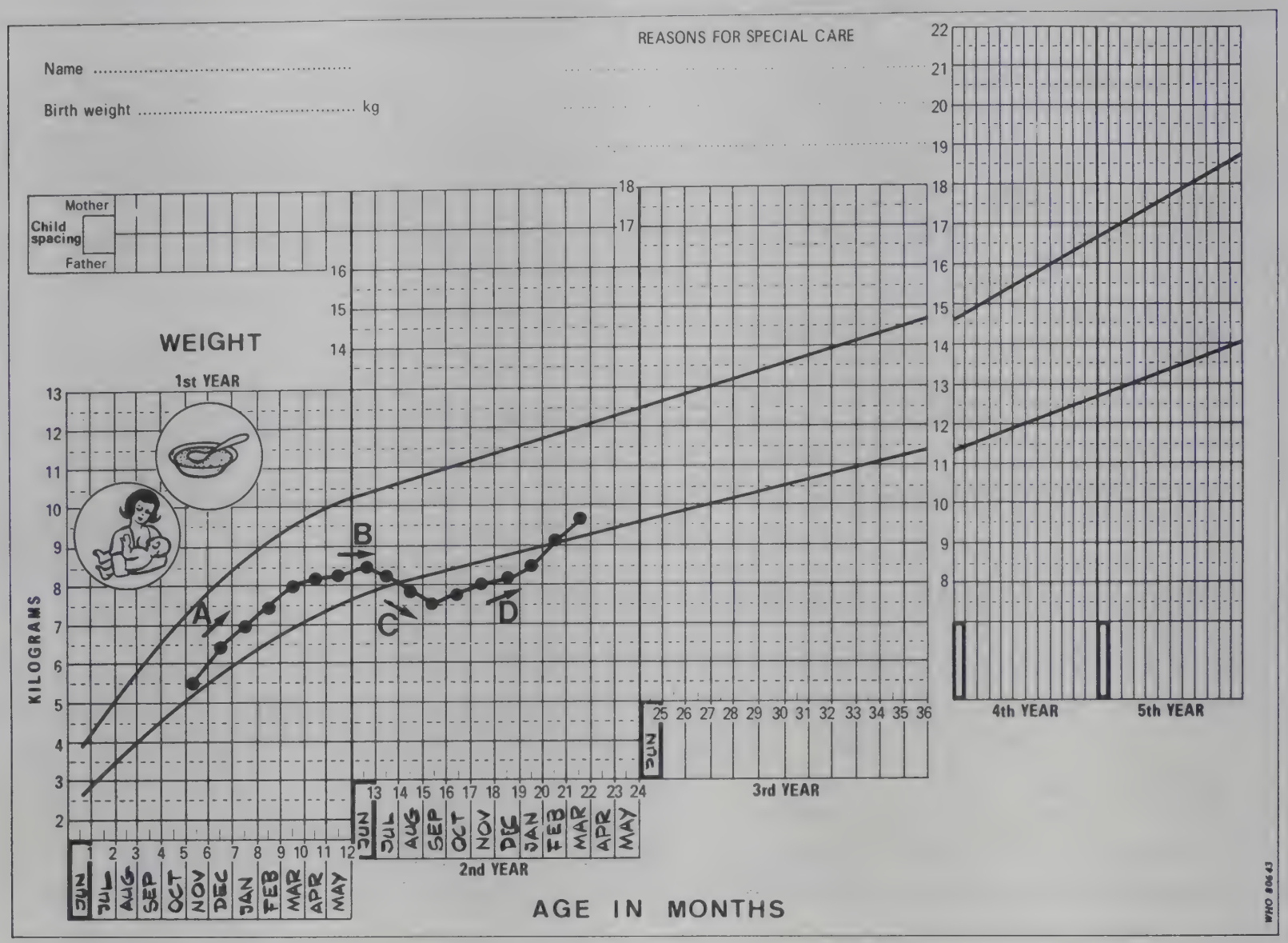
Look carefully at the growth line in Fig. 8. Note that the line is going upwards from left to right, from 5.5 kg in September to 6.5 kg in November and then to 7 kg in January 1978. Remember that when the line is going up, the child is growing; this is good. If the line is horizontal or going down the child is not growing well, and this is not good. Some charts have examples of the direction of growth curve printed below the chart. This is to remind health workers that the direction of growth, upwards, horizontally or downwards, is very important.

> In the first 6 months of life a levelling off or a downward movement of the growth line is a serious matter. After 2 years a small variation over one or two months is not so serious.

The importance of the direction of the growth curve is illustrated in Fig. 9. Arrows A, B, C, and D have been drawn on the growth chart parallel to the growth curve for different periods. The growth curve parallel to arrow A is good. The growth curve parallel to arrow B is not satisfactory and action should have been taken. When the growth curve fell, parallel to Arrow C, the child was in a dangerous condition and urgent action was needed. Any child who does not gain weight for 3 months should be referred to the supervisor or health centre. When the growth curve returned to the direction of arrow D, the child's growth became normal again.

Remember that it is the direction of the growth curve that is more important than the position of the dots on the curve. The dots parallel to arrow B are above the lower reference line, but the growth curve is levelling off and this is a matter for concern. The dots parallel to arrow D are below the reference lines, but the direction of the growth line is once again upwards and therefore the mother is congratulated for her good care.

FIG. 9 THE DIRECTION OF THE GROWTH CURVE IS MOST IMPORTANT



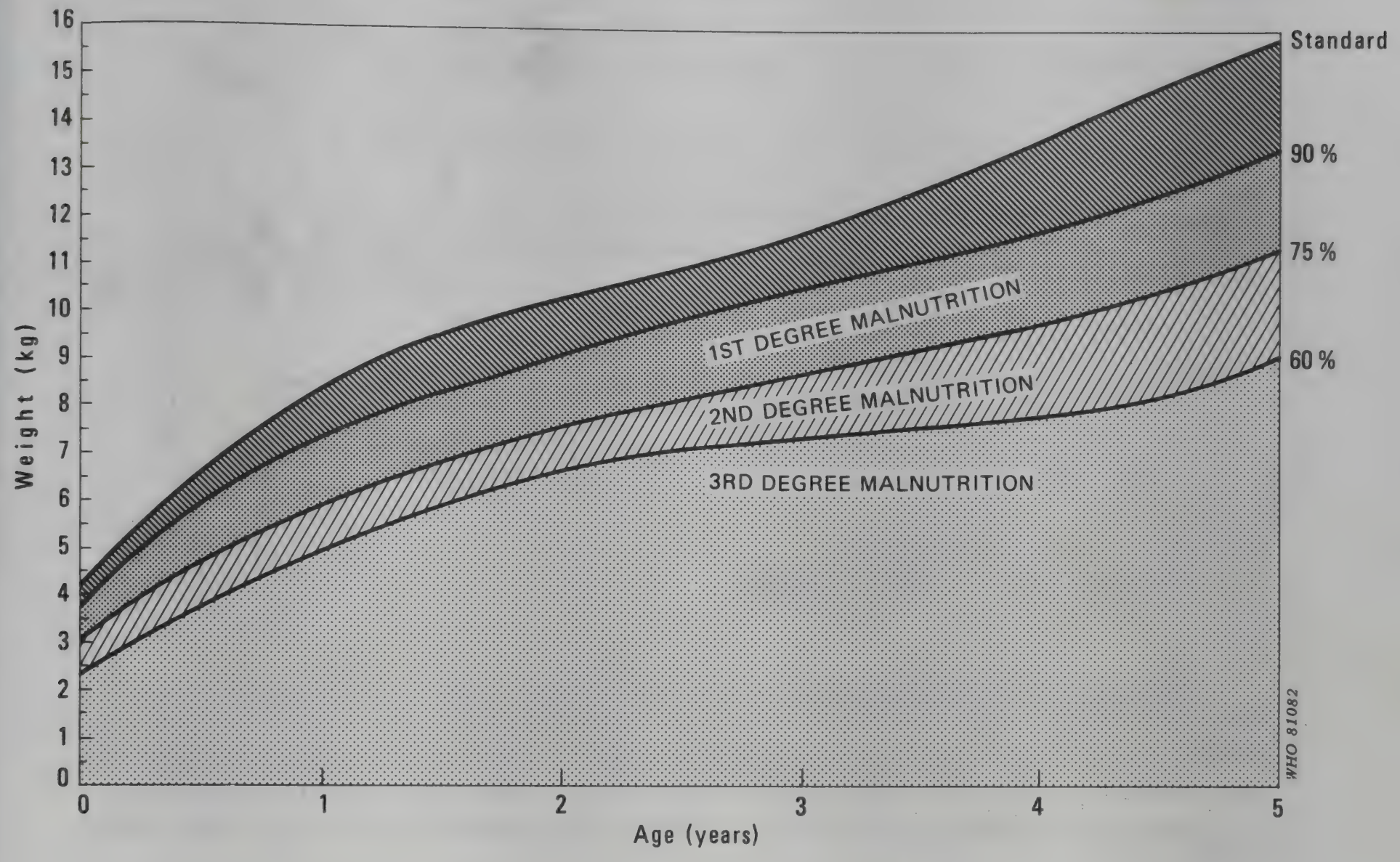
> The direction of the growth curve is more important than the position of the dots

2.7 How to measure the nutritional status of children

There is no easy and satisfactory way to measure the nutritional status of a child at a single examination. Two methods that are widely used are described below, but neither of them is ideal, and it is better to use the growth chart just described to see what direction the growth curve takes.

(1) *Weight-for-age (Gomez-type) nutrition classification*. In this classification, the average weights of a series of children (up to 5 years of age) of different ages are used as standard. A curve representing this standard is drawn across a growth chart. Below it are drawn parallel curves representing 90%, 75%, and 60% of the standard weights (Fig.10). Sometimes 80%, 70%, and 60% lines are drawn. According to this system, if a child's weight dot at any age is between the 90% and 75% line, he is considered to have first-degree malnutrition. If the weight dot is between the 75% and 60% lines, he has second-degree malnutrition. If the weight dot is below the 60% line, he is said to have third-degree malnutrition.

FIG. 10 GOMEZ-TYPE CLASSIFICATION OF MALNUTRITION



Although this classification is widely used, it should be borne in mind that a full diagnosis of the nutritional status of the child should not be made on this basis alone. A child may be heavy for his age, but if he is not growing (i.e., if his growth curve is not moving upwards) he can be in danger. Similarly, a child may be light for his age (the weight dot being below the 75% line) but he will not be in serious danger as long as his growth curve is moving upwards.

(2) *Assessing nutritional status by mid-upper-arm circumference*. When babies are about 1 year old they have quite a lot of fat under the skin of their arms. When they are 5 years old there is much less fat and more muscle. But the distance around the upper arm (the circumference) remains almost the same between the ages of 1 and 5 years. If a child is malnourished, this circumference is reduced. By measuring the middle of the upper arm of children above the age of 1 year, using a tape (Fig.11) or special measuring strip, one can find out whether a child is malnourished or not. Malnutrition is most common between the ages of 1 and 5 years.

FIG. 11
MEASURING THE MID-UPPER-ARM
CIRCUMFERENCE WITH A TAPE MEASURE

Making a measuring strip. Tape measures are not always available and some community health workers may find them difficult to use. Instead, community health workers in many countries use a string or a strip of material that does not stretch. Old X-ray film is very good for making measuring strips. A measuring strip can be made by following the instructions given below.

1. Get an old X-ray film from the nearest hospital or clinic.
2. Soak the film for one night in a strong solution of washing soda. This is done in order to remove the emulsion from the film.
3. Wipe the film clean with a cloth. The film should now be clear celluloid.
4. Cut out a strip about 20 cm long and 2 cm wide.
5. Using a sharp needle, make two scratches (fine vertical lines) on the strip at 12.5 cm and 13.5 cm respectively from one end of the strip.
6. Colour the strip red from the end to the 12.5-cm mark with a spirit felt pen.
7. Colour the strip yellow from the 12.5-cm mark to the 13.5-cm mark with a similar pen.
8. Colour the strip green from the 13.5-cm mark to the other end.

In colouring the strip two points have to be remembered. First, always use spirit felt pens; the colour with such pens will be permanent. Secondly, colour both sides of the strip.

Using the strip. The measuring strip should be used only on children who are more than 1 year old. Put the strip around the mid upper arm of the child and see which colour is touched by the red end of the strip.

- If the red end touches the green part of the strip, the child is well nourished.
- If the red end touches the yellow part, the child is probably malnourished.
- If the red end touches the red part, the child is malnourished.

This is a quick and easy way of determining malnutrition in children. It is, however, not suitable for follow-up, i.e., for seeing whether the child is improving or not.

EXERCISE 3.1 Making your own local-events calendar

In this exercise the trainees make their own local-events calendars. They should make it on the basis of the description of a local-events calendar on page 24, borrowing calendars that give information such as the phases of the moon in the past few years and adding important local events; especially religious festivals celebrated in the area, fairs, visits from circuses, serious storms, and similar happenings that will linger in the memory of the community.

EXERCISE 3.2 Making and interpreting a growth chart

In this exercise the trainees practise how to make a weight chart and how to interpret a growth curve. A blank weight chart is provided for each trainee.

1. Using the information given below fill in the blank weight chart provided to you.

A girl was born in May 1976. Her name is Laxmi. She was weighed on different months following her birth. The weights in each of the months are given below.

1976	May	3.0 kg
	June	4.0 kg
	July	4.5 kg
	August	5.5 kg
	September	6.0 kg
	October	6.5 kg
	November	Did not attend
	December	7.0 kg
1977	February	Had measles
	March	6.5 kg Had diarrhoea
	April	6.0 kg Put under special nutrition care
	May	6.5 kg
1977	June	7.5 kg
	September	9.0 kg
	October	10.5 kg
	December	11.5 kg
1978	January	11.5 kg Stopped breast-feeding
	February	11.5 kg
	April	10.5 kg
	June	12.0 kg
	July	11.5 kg
	November	12.0 kg Brother born
	December	11.5 kg
1979	February	11.5 kg
	April	12.5 kg

2. Put the dots in the right columns for the weights given above.

3. Join these dots by a line and draw a growth curve.

4. Turning the chart sideways, write out important information (e.g., diarrhoea and special nutrition care) in the appropriate columns.

5. Now answer the following questions.

(a) How old was Laxmi in: December 1976? .....

April 1978? .....

(b) Why do you think Laxmi did not gain weight between January and April 1978, and between December 1978 and February 1979?

.....

.....

(c) What special help and advice would you give Laxmi's mother in:

February 1977? .....

January 1978? .....

EXERCISE 3.3 Practising weighing a baby and filling in a growth chart

Hang up a spring scale and ask the trainees to gather around it and sit comfortably. Give each trainee a growth chart. Tie a doll to the handle of a bucket and hang the bucket on the scale. From a second bucket pour some water into the first bucket until the weight on the scale reads 3 kg. This is the birth weight of the imaginary baby. Ask the trainees to write the present month in the appropriate box and put a weight dot in the right column. Then ask them to write the subsequent months in the appropriate boxes. Next ask one trainee to come up to the scale and pour some additional water in the hanging bucket and read out the new weight on the scale. This will be the weight for the next month. Again ask the trainees to put the weight dot in the appropriate column. Repeat the procedure by asking other trainees to come up to the scale one by one and add water to the hanging bucket. From time to time, ask a trainee to remove some water from the bucket, to represent loss of weight. This might be caused by an illness or by stopping breast-feeding; the trainees should also enter these events on the chart.

This type of exercise is sometimes called a "simulation exercise" because it simulates (it is like) the real-life situation. You can also use a flannel graph to demonstrate how to fill in a growth chart.

EXERCISE 3.4 Role play about filling in a growth chart for a new baby

In role play the trainees act out typical real-life situations they are likely to encounter when they become community health workers. By playing different roles they learn about the attitudes of different types of people they will meet in the community.

An example is given below. In this play a mother comes for the first time with her new baby to the community health worker. The community health worker takes this opportunity to fill in a growth chart for the new baby and to give the mother some advice on immunization. The name of the mother in this story is Mrs Kartini.

Community health worker	Good morning Mrs Kartini. How are you and your new baby?
Mrs Kartini	Good morning. I am very well, thank you, and my baby is also doing well.
Community health worker	The first thing we will do is make a growth chart for your baby. This will be a record of his health. I will explain this later. Do you mind if I ask you some questions about the baby?
Mrs Kartini	No, I don't mind.
Community health worker	First, what is your baby's name?
Mrs Kartini	His name is Peter.
Community health worker	Your full name is Lika Kartini, is that right?
Mrs Kartini	Yes.
Community health worker	What's your husband's full name?
Mrs Kartini	He's called David Kartini.
Community health worker	On what date was Peter born?
Mrs Kartini	I don't remember exactly. It was in the first week of July, the day after the village school closed for the holidays.
Community health worker	Thank you. That will have been Friday, the sixth of July. I will now write the months in the chart. What is your home address?
Mrs Kartini	I live in Madang Street. There is no house number, but we live near the village well.

Community health worker How many brothers and sisters does Peter have?

Mrs Kartini Only one, A brother.

Community health worker What's his name?

Mrs Kartini John.

Community health worker Do you have a growth chart for John?

Mrs Kartini No.

Community health worker Do you know John's date of birth?

Mrs Kartini No, but he has always been quite healthy!

Community health worker He should have some immunizations, to stop him becoming ill. If you agree, I will give him an immunization against tuberculosis today. First of all, I want to weigh Peter. (After weighing). Peter's weight is six and a half kilograms. I will now put a large dot on the chart, opposite 6.5 kg above this month, which is September. You can see that I have written the names of the months in the boxes at the bottom of the chart. I started with July, in the first box on the left. This is because Peter was born in July.

Mrs Kartini Is that a good weight?

Community health worker Yes, that is a good weight for a two-month old baby, but we must weigh Peter each month in order to be sure that he is gaining weight regularly. That will mean he is growing well and is healthy. Now I want to ask you some more questions. First of all, what are you giving Peter to eat?

Mrs Kartini I only breast-feed him.

Community health worker That's good. It is best if you keep breast-feeding him as long as possible, until he is two years old, or even older. But, in one or two months you can start to teach him to taste other foods, in addition to breast-milk.

EXERCISE 3.5 Interpretation of growth charts

Look carefully at the weight charts of Tola, Raman, Jose and Sara (Fig. 12, 13, 14 and 15). Trainees should be able to make several comments about each chart and about the risks to and the progress of each child. Ask one trainee to explain each chart and then discuss the chart together.

Compare the growth and the general situation of Tola and Jose in the first 9 months of their lives. In what ways were they similar, and in what ways did they differ?

Look at the growth charts of Raman and Jose. When they were both 1 year old, what advice on nutrition would you have given to their mothers?

EXERCISE 3.6 Identifying mistakes on growth charts

Look carefully at the growth charts of Leela and Tanete (Fig. 16 and 17). Can you see any mistakes or unexpected results on the charts?

Discuss how to avoid mistakes of the type shown on these charts.

EXERCISE 3.7 Field evaluation of use of weight charts

1. Visit a village, and systematically call at each house where there are children under 5 years of age. What proportion of children have growth charts? How many children had charts but their parents have lost them?

(This indicates how effectively the service covers the whole community).

2. At a clinic or during home visits check a number of charts to see if the items given below have been correctly filled in:

- Child's name and address
- Family members and state of health
- The months and years in the calendar
- Weight dots and lines
- Risk factors. Have these been written in when appropriate?
- Illnesses. Have these been written in?
- Family planning advice given to parents and the attitude and action of the parents
- Immunizations. How many immunizations have been given to children over 1 year of age?

(This indicates how well trained and how careful the health personnel are in using weight charts).

FIG. 12 GROWTH CHART OF TOLA

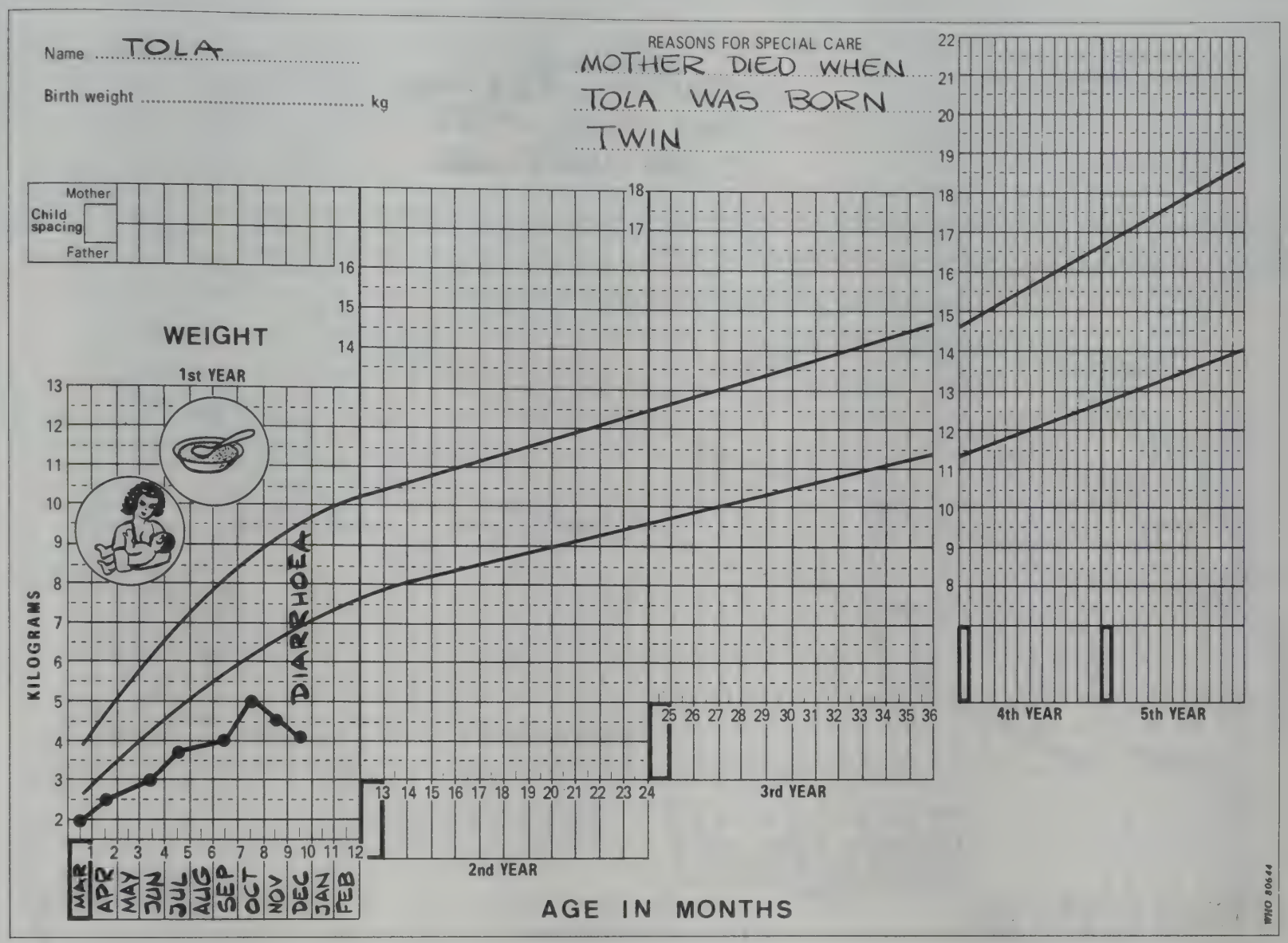


FIG. 13 GROWTH CHART OF RAMAN

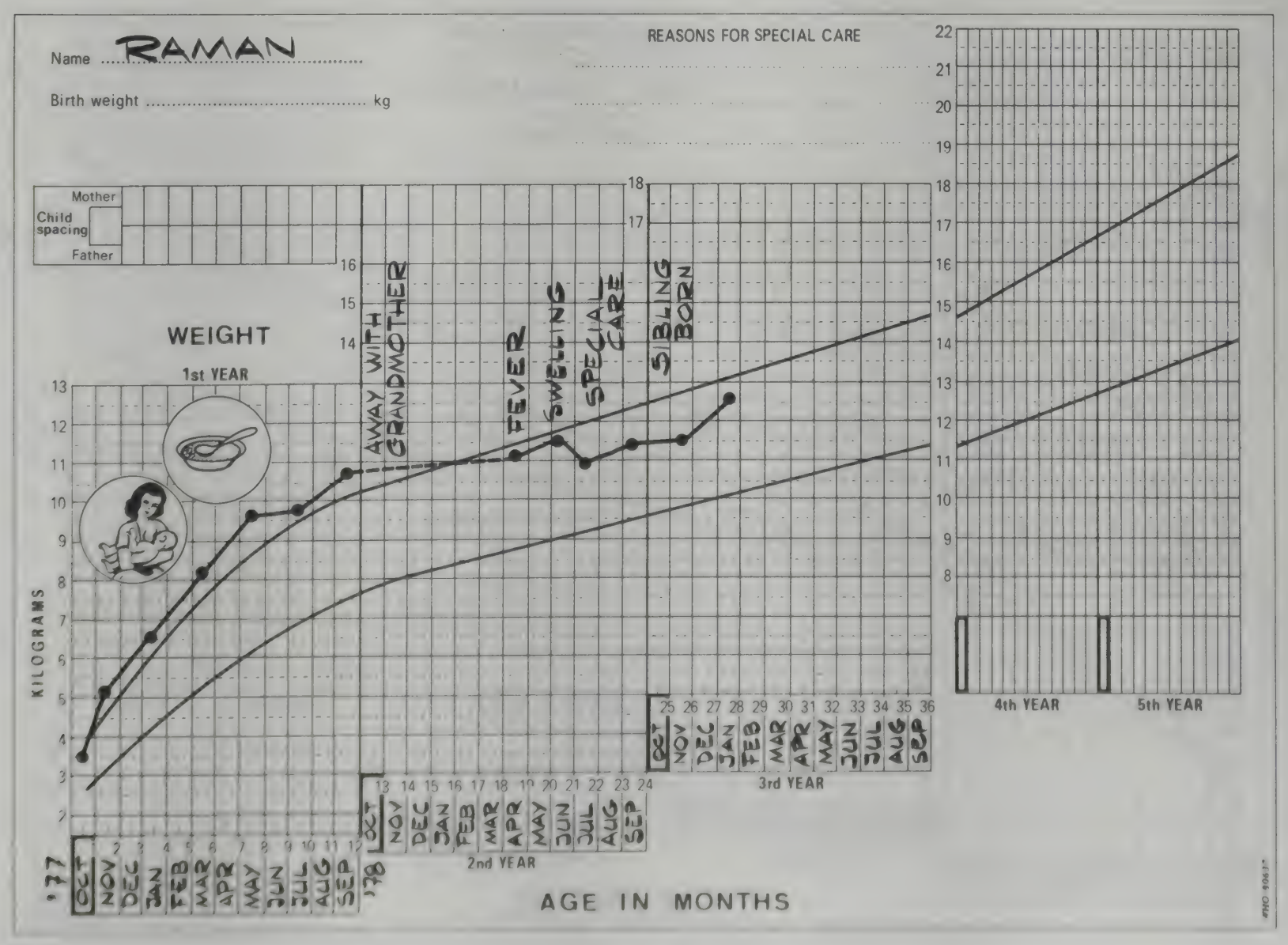


FIG. 14 GROWTH CHART OF JOSE

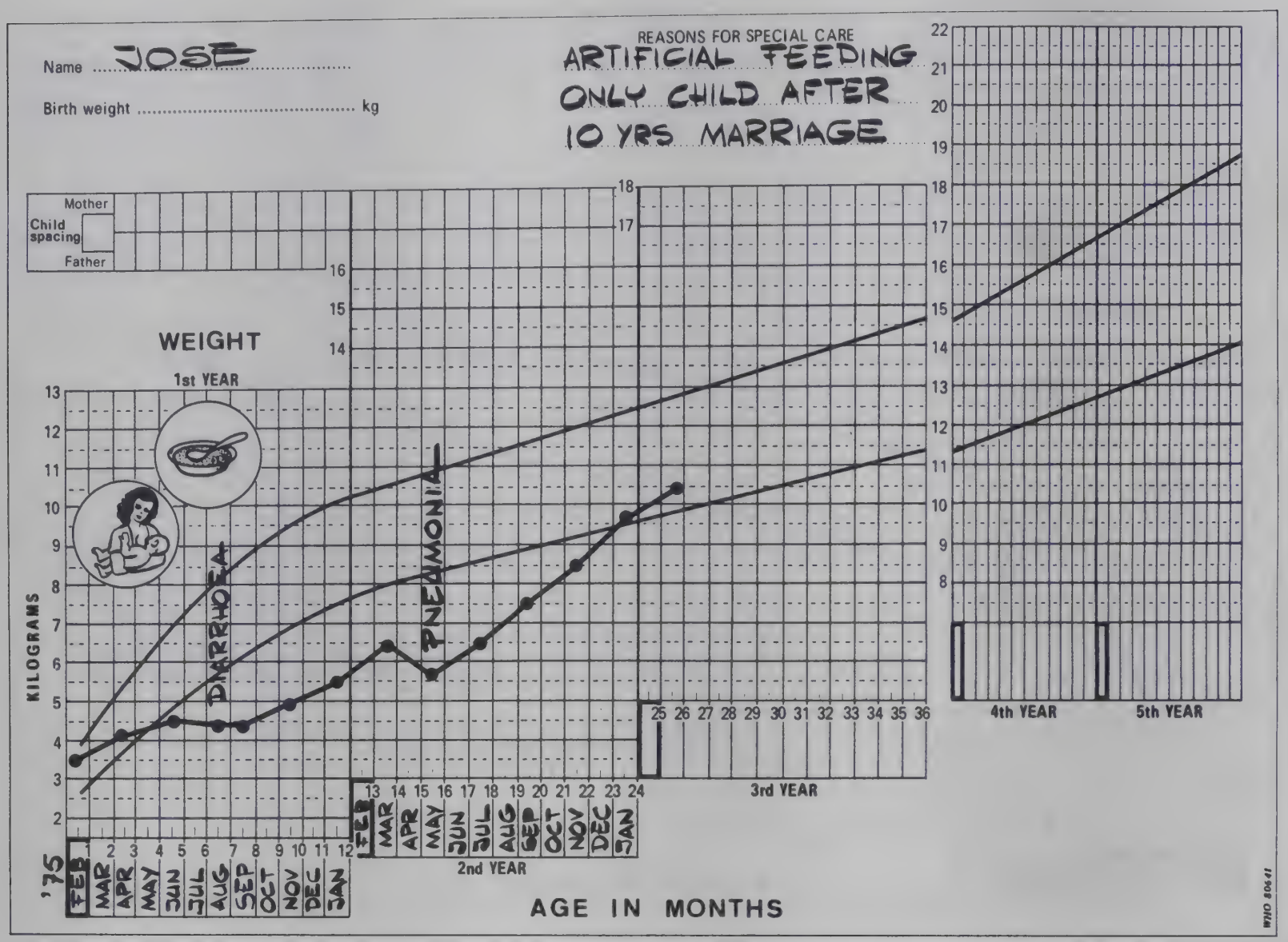


FIG. 15 GROWTH CHART OF SARA

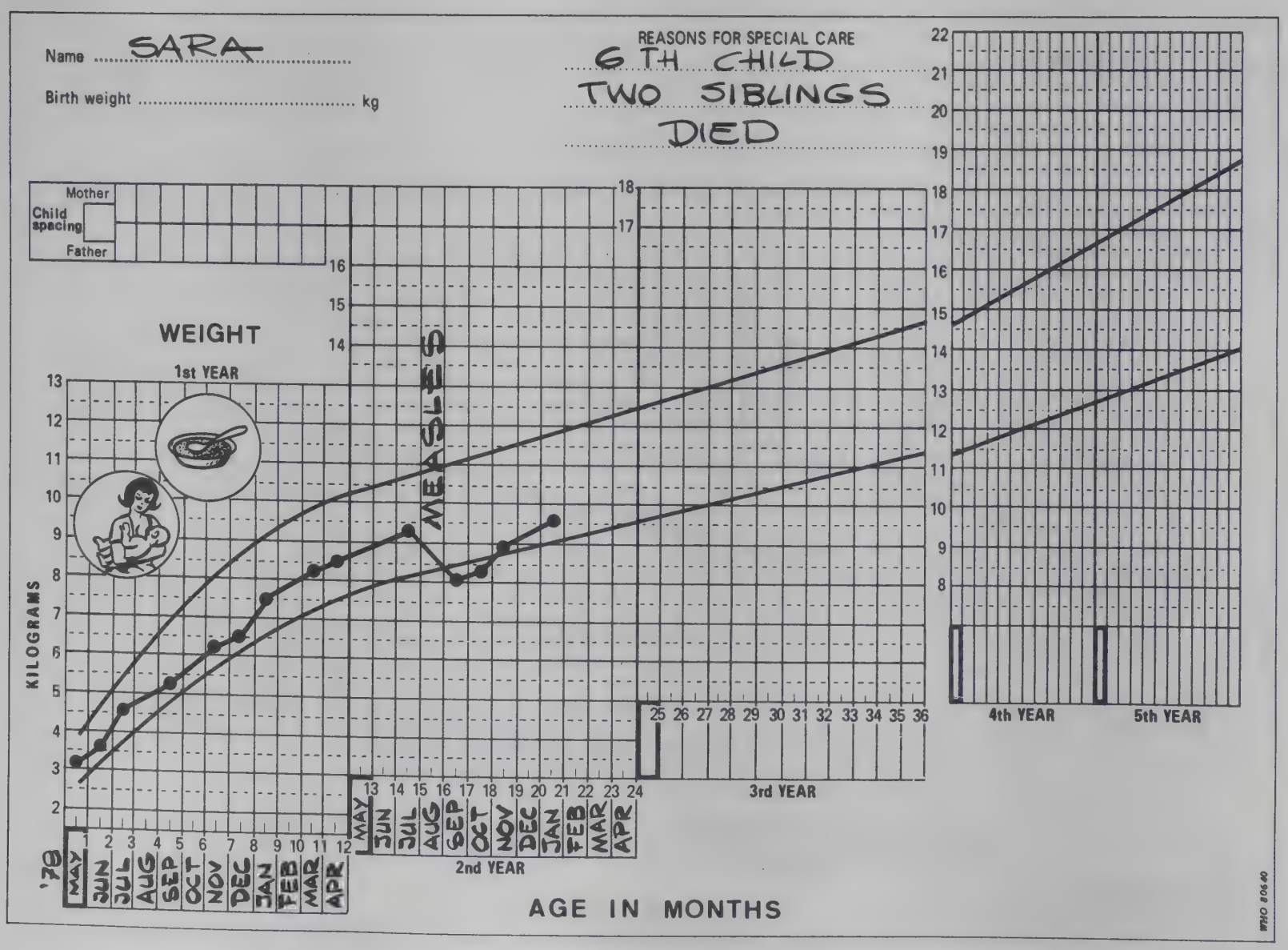


FIG. 16 GROWTH CHART OF LEELA

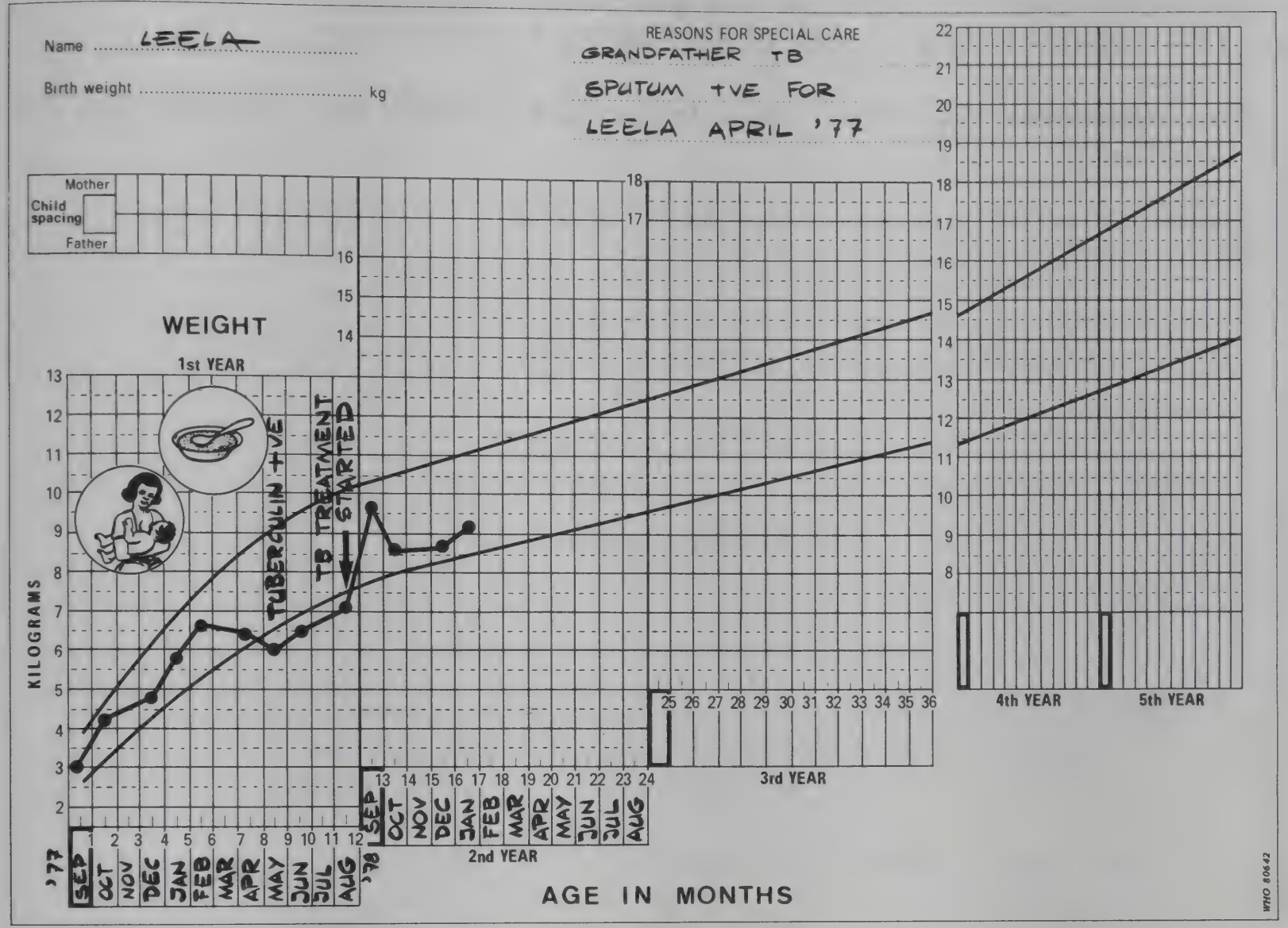
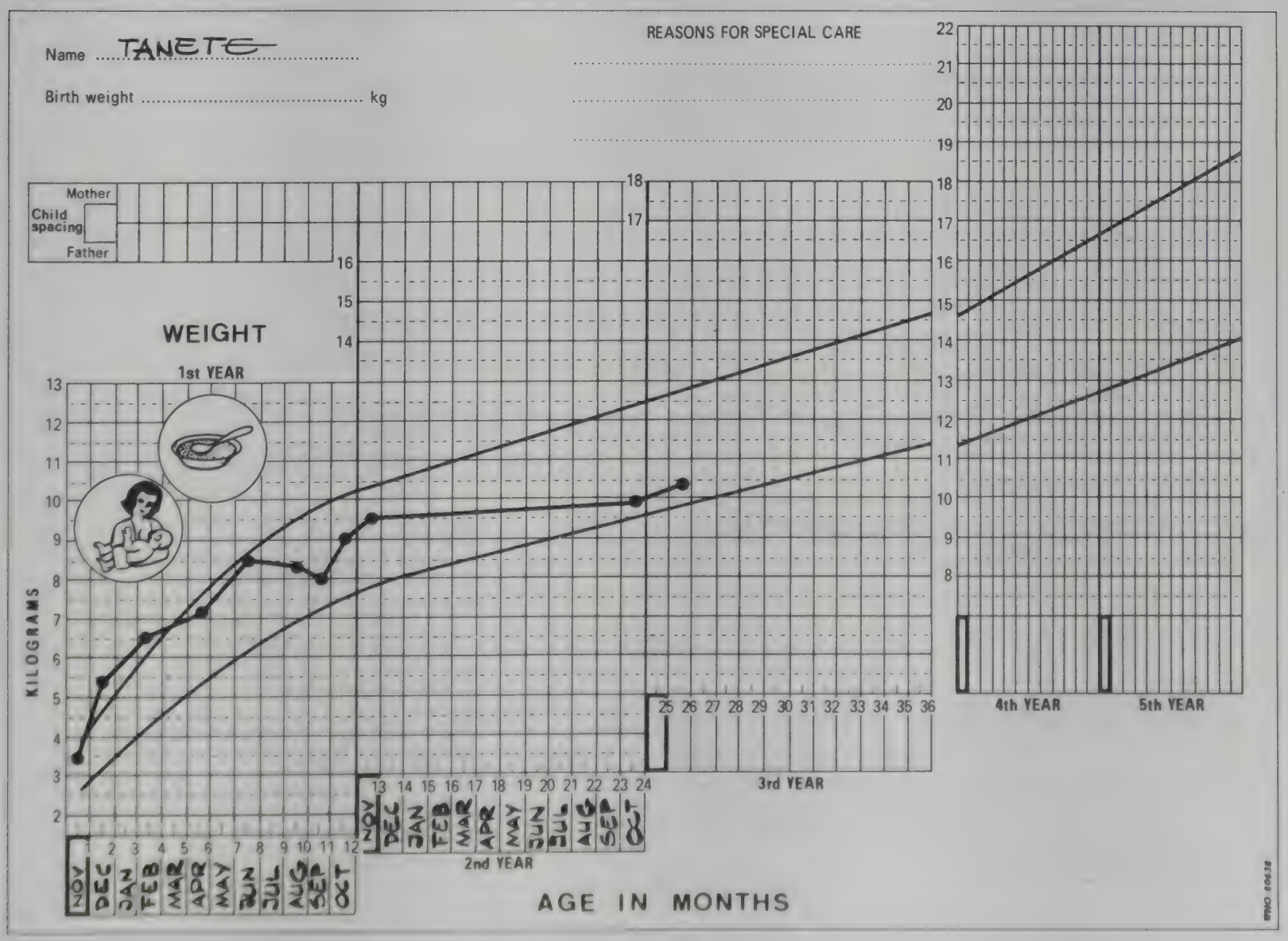


FIG. 17 GROWTH CHART OF TANETE



3. At a clinic or during home visits note how many times children have been weighed in the 1st, 2nd, and 3rd year after birth. This is done by adding the number of dots on the growth chart for each year.

(This indicates how often there is contact between the children and the health services).

MODULE 3

BREAST-FEEDING

1. LEARNING OBJECTIVES

After studying this chapter, taking part in discussions, and doing the exercises and activities, a community health worker should be able to:

o Find out what are the child-feeding practices (especially those related to breast-feeding) in the community.

o Find out from individual mothers how they feed their children and what they think about breast-feeding.

o Encourage women to breast-feed their infants and teach them convincingly and sympathethically the advantages of breast-feeding.

o Reassure and help mothers to overcome problems of breast-feeding - flat or sore nipples, swollen (engorged), tender, or painful breasts, and fear of too little milk or poor quality of milk.

o Show women how to breast-feed a child, explaining the practical points.

o Explain to a mother the risk and cost of bottle feeding.

o Decide if bottle feeding is necessary all the same.

o Teach about artificial feeding in detail and demonstrate how to overcome the risks.

2. TRAINING CONTENT

2.1 Finding out how mothers feed their infants

It is important to know how mothers in the community feed their children. If an infant is properly fed during the first year, he or she will grow well and have a good start in life. Correct feeding and good growth in the first year mean that the risk of malnutrition in the second and third years is less. If a child is not fed well in the first year, it will be difficult to make up for this in later years. Breast milk is the most important food in the first year and continues to be very valuable in the second year. If we know how a child is fed, we can help him better.

Mothers are always proud of their babies. But in some countries mothers are afraid if someone admires their small children. They think some evil may come to a child if he is admired. Mothers like people to take an interest in them and their families. But mothers may be afraid or ashamed if they think people will criticise the way they look after their children. Therefore, one must be careful and gentle when finding out how mothers feed their children. Because feeding babies is a personal matter, one must first make friends with the mothers. Mothers should know that you want to learn about feeding practices so that you can help them.

One can find out about feeding practices by observing and questioning. Observing means watching carefully, trying to understand, and remembering. Questioning can be done in a simple way or in a systematic way with a list of questions. Both these methods are useful, and for both the questioner's approach should be friendly and sympathetic. Some observation and questioning was done when finding out about the community in Module 1. The community health worker should know answers to the following questions.

SOME USEFUL QUESTIONS FOR FINDING OUT ABOUT INFANT FEEDING PRACTICES IN THE COMMUNITY

- How soon after birth do mothers give the first breast-feed?
- How are newborn babies fed for the first few days of life?
- Do all mothers in the community breast-feed their babies?
- For how many months does a mother breast-feed her baby in the community?
- How many times per day and night is breast milk given?
- What is the first other food or drink given to a baby? When and how is it given - by spoon, cup, bottle, or hand? At what age is it given?
- What feeding practices are forbidden (what are the food taboos)? (For example, in some areas breast-feeding during pregnancy is forbidden. In some places feeding colostrum, the fluid from the

breasts in the first day after delivery, is a taboo.) What foods should a mother not eat during lactation?

- Are there beliefs about certain foods or local herbs which are thought to increase the amount of milk produced by the mother?
- What food or drink is given to the baby when the mother goes out to work?
- Do any mothers have difficulties in breast-feeding their children? What are the problems? From whom do mothers seek advice about breast-feeding?
- If a mother is bottle feeding her baby, why did she decide to feed the baby in that way? What mixture does she feed him?

Where breast-feeding is the normal practice in a community, little or no education is needed except for those with special problems. The traditional practice should be encouraged. In areas where traditional knowledge and practices are lost, especially in towns, education and personal support are needed. In many developing countries breast-feeding is usual in the first year of life. Recently, there have been some influences which are changing this important practice. These influences include urban ways of life, women working away from their homes to earn additional incomes, the advertising of infant foods, and the idea that bottle-feeding is modern and therefore somehow better. This is wrong. Community health workers should act to reduce the effect of these bad influences on breast-feeding.

2.2 Teaching about the advantages of breast-feeding

There are many advantages of breast-feeding. A community health worker must know and believe in these advantages. It is important that she and her relatives breast-feed their babies if they have any. If important and influential women in a community breast-feed their children, this will encourage others to do the same.

BREAST MILK IS THE BEST NATURAL FOOD FOR BABIES

Breast milk contains the right mixture of fats, sugars, and proteins for a growing baby. Therefore it is easy to digest. It also contains substances which protect the child from infection. Cow's milk is the natural food for calves. Even if cow's milk is modified, it cannot have all the good qualities of human milk for a human baby.

Breast milk is suited to the growth needs of babies. Up to 4 months of age no other food is needed. Starting from 4-6 months other foods should also be given, but breast-feeding should continue. Breast-feeding is still important for growth in the second year of life.

BREAST MILK IS ALWAYS CLEAN

FIG. 18 BREAST MILK IS THE BEST NATURAL FOOD FOR BABIES

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Mother's milk passes straight from the breast into the infant's mouth. In that way it cannot be infected by germs. Many germs grow well in milk. Other milks are easily contaminated by dirty hands, spoons, cups, bottles, or flies. These milks should be boiled before being given to babies.

BREAST MILK PROTECTS THE BABY FROM DISEASE

Breast milk contains protective substances against the germs that cause diarrhoea and some coughs and colds. Studies have shown that breast-fed children have fewer infections.

BREAST MILK IS AVAILABLE 24 HOURS A DAY
AND REQUIRES NO SPECIAL PREPARATION

With breast milk there is a special mechanism of demand and supply. The more often a baby sucks, the more milk the mother will produce.

Other types of milk need to be boiled before being fed to babies. They also need to be diluted with water when a baby is small. Any water used for dilution should also be boiled and cooled. Sugar should be added. If sugar is added to milk, it is preferable to boil the milk afterwards, as the sugar in most cases is not clean. The boiling requires fuel, and the mixing and cooling take time.

BREAST MILK DOES NOT NEED TO BE PURCHASED

Most foods cost money, but mothers' milk is free. An infant who is 3 months old needs 600-700 ml of milk per day. If breast milk is not given, other milk must be purchased. In an ordinary home this will mean a large part of the family's income. There will be extra cost for fuel. (A mother should have extra food when she is breast-feeding, but this costs only about a quarter or less of the price of buying milk). Illnesses are more common when you use other types of milk. Treatment of the illnesses will cost both time and money. Why waste money and invite illness by bottle feeding?

BREAST-FEEDING MAKES A SPECIAL RELATIONSHIP
BETWEEN MOTHER AND BABY

Breast-feeding permits a closeness between a baby and mother. Every human sense is involved in breast-feeding. This contact includes touching, warmth, smell, looking, etc. If this close contact is started in the first few hours of life, the relationship is especially strong. Breast-feeding gives a feeling of security and love to the baby.

BREAST-FEEDING HELPS PARENTS TO SPACE THEIR CHILDREN

When a mother breast-feeds, her womb contracts. There are also other changes in the mother that result from breast-feeding. Mothers who breast-feed do not menstruate as soon after delivery as mothers who give artificial feeding. Mothers who breast-feed do not generally become pregnant again so soon. Breast-feeding therefore helps in spacing children. In this way a mother can give full attention to a small child for a longer time before the next child is born. Of course, breast-feeding is not a certain way of avoiding pregnancy. If parents want to be sure of not having another baby too soon, they should use some other contraceptive method in addition to breast-feeding. (A contraceptive is a method which prevents a woman becoming pregnant. Most contraceptive pills should *not* be used by a mother who is breast-feeding; they decrease the amount of milk she produces.)

2.3 Questions and practical points about how to breast-feed

Mothers in the countryside are the world's experts in breast-feeding. They learn from watching their own mothers, relations, and neighbours breast-feed their babies. They learn naturally and do not need special education. We can learn from them.

The most important things the community health worker needs to know about breast-feeding are given below. These are in the form of answers to questions mothers may ask. Some mothers may be too shy to ask; nevertheless they need to know the answers to get the best results from breast-feeding.

When should mothers start breast-feeding?

A mother should put her baby to her breasts on the day he is born. It is best to start very early, within 1 or 2 hours of birth. There is little milk at that time, but it helps to establish feeding and a close relationship.

Should the first watery milk that comes before the regular milk be given to the baby?

This first milk is called *colostrum*. Colostrum is very good for the baby. It protects the baby from infectious diseases such as diarrhoea. The regular milk comes on the third to sixth day after the birth.

Can all mothers breast-feed their babies?

Yes, practically all. There are very few conditions in which a mother cannot feed her baby. Difficulties of breast-feeding will be discussed later.

How do you put the baby to the breast?

A mother normally knows this. Only teach her if she is having difficulty.

The mother should be comfortable. After delivery, sitting up may be painful. The mother or baby can be supported by pillows, or she may feed the baby while lying down on her side with the baby beside her.

If she touches the baby's cheek with her nipple, the baby will automatically turn his head and open his mouth. Not only the nipple, but also the areola (the dark skin around the nipple) should be in the baby's mouth. The baby's chin should be pressed up against the breast. If the breast is very full, it may press against the baby's nose and make it difficult for him to breathe. To avoid this the mother should lean towards the baby; she can also gently hold the breast away from the baby's nose with her fingers.

The baby should suck from both breasts at each feed. Feeding should start with the right breast on one occasion, and the left breast on another.

If the mother can relax the milk will flow easily and she and the baby will enjoy the closeness and satisfaction of breast-feeding.

How often should the mother breast-feed?

The more often the baby sucks, the more breast milk will be produced by the mother. Allow the baby to breast-feed whenever he wants. During the first few days the baby will cry when he wants milk; mother and baby usually settle into a rhythm. It is not a good thing to feed at a precise time according to a clock.

How long should a baby be fed each time?

The baby should be allowed to suck for as long as he wants. At first the time may be quite short, 5-10 minutes from each side. When the baby gets older and stronger he will suck for a longer time because he needs more milk.

Should the baby be fed at night?

Small babies need to be fed at night. In the first few weeks of life most babies wake up with hunger in the night. They need extra feeding. In many countries babies sleep next to their mothers. There is no danger of a mother crushing her child. Babies enjoy the warmth and closeness of the mother's body. Many babies feed in the night, sometimes without waking the mother.

Up to what age should a child be breast-fed?

A baby should breast-feed for as long as possible. It is good to breast-feed for at least one year. Breast milk is still important for growth in the second year of life.

How do you know if the baby is getting enough breast milk?

Most mothers produce enough milk for a baby to grow well for the first 4-6 months of life. Growth should be measured by weighing the baby regularly (see Module 2).

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How quickly should breast-feeding be stopped?

If a mother wants to stop breast-feeding, she should do it gradually. Stopping breast-feeding should not be sudden. Other foods should first be introduced and increased over a period of 2-3 months. Then the baby will suck less, and less milk will be produced.

Should breast-feeding be stopped if the mother becomes pregnant?

It is not necessary to stop breast-feeding when a mother becomes pregnant. The quality of her milk will still be good, but the quantity may decrease.

Breast-feeding for the first few months of pregnancy will cause no harm to the child in her womb. A pregnant mother who is also breast-feeding will need plenty of extra food.

It is not good for a mother to become pregnant soon when she has a small baby. She will not be able to give the first child breast milk long enough.

What can a working mother do about feeding her baby when she is away at work?

If she is going to be away for a short time, she should feed the baby just before she leaves. If she has to be away for a long time, she should try and take the baby with her. The baby can be fed anywhere. If she is working, the employer should be asked if she can have time off to feed her child. Some countries have laws to ensure that working mothers have prolonged maternity leave and time during working hours to breast-feed babies. If she must leave the baby she should make good arrangements. Another mother may give the baby a breast-feed. If the baby can take other foods, something should be carefully prepared and preserved for him. A responsible person should be shown how to feed this food to the baby when the mother is away. (Suitable foods will be discussed in Module 4.)

Should the baby be given occasional feeds from a bottle?

NO. A small baby does not need extra feeds from a bottle. If the baby cries, he should be put to the breast more often. Mother's milk provides all that a young baby needs. Boiled water may be given if a baby has diarrhoea or fever, but breast-feeding should continue. The boiled water can be given with a spoon or a special feeding cup. Bottles are often dirty, difficult to clean, and can be dangerous. Older children can drink from a cup.

Can contraceptive pills be taken while breast-feeding?

Some contraceptive pills reduce the amount of breast milk. Breast-feeding mothers should use pills which do not affect milk production or preferably use other methods of avoiding pregnancy during the period of breast-feeding. This is important because a baby should receive breast milk for as long as possible.

2.4 Overcoming problems of breast-feeding

There are a number of common problems with breast-feeding, especially in the first one or two weeks. The most frequent are a mother's anxieties about her performance, and the amount and quality of her milk. Others include flat nipples, sore nipples, and very swollen and tender breasts.

Preparation for breast-feeding during pregnancy can avoid a number of these problems. The community health worker should contact every mother during pregnancy and discuss breast-feeding. The mother should be taught to pull out the nipples, gently press out a few drops of fluid, and build up her confidence in the ability to feed successfully. The community health worker should visit the mother soon after delivery and give encouragement, support, and comforting answers to the mother's problems.

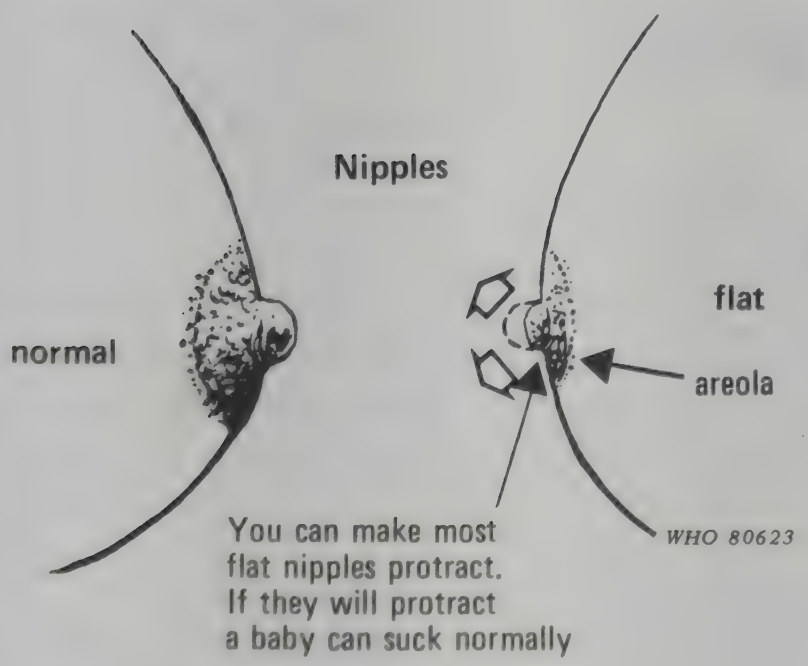
2.4.1 Flat nipples

Some women have short, flat nipples. Flat nipples are most common in women who are having their first child (Fig. 19). Most nipples are protractile (you can pull them out) and quite long. If a nipple is not protractile, the baby will have difficulty in feeding.

Examine the breasts of every pregnant woman. If the nipples are flat, see if they will protract. Teach her to press her nipples and pull them gently (Fig. 20). She should do this for several minutes every day. Her nipples will grow longer.

After the baby is born, nipples can still be stretched further. The mother should squeeze the areola before putting the nipple in the baby's mouth. If the breast is very full, first express some milk before doing this.

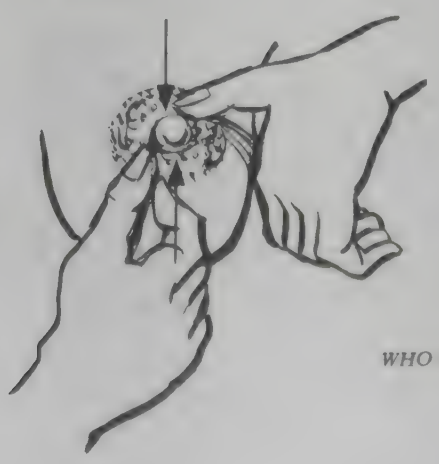
FIG. 19 A FLAT NIPPLE



You can make most flat nipples protract. If they will protract a baby can suck normally

FIG. 20 PREVENTING FLAT NIPPLES

If a mother squeezes her nipples like this several times each day during pregnancy, they will get longer and her baby can suck more easily

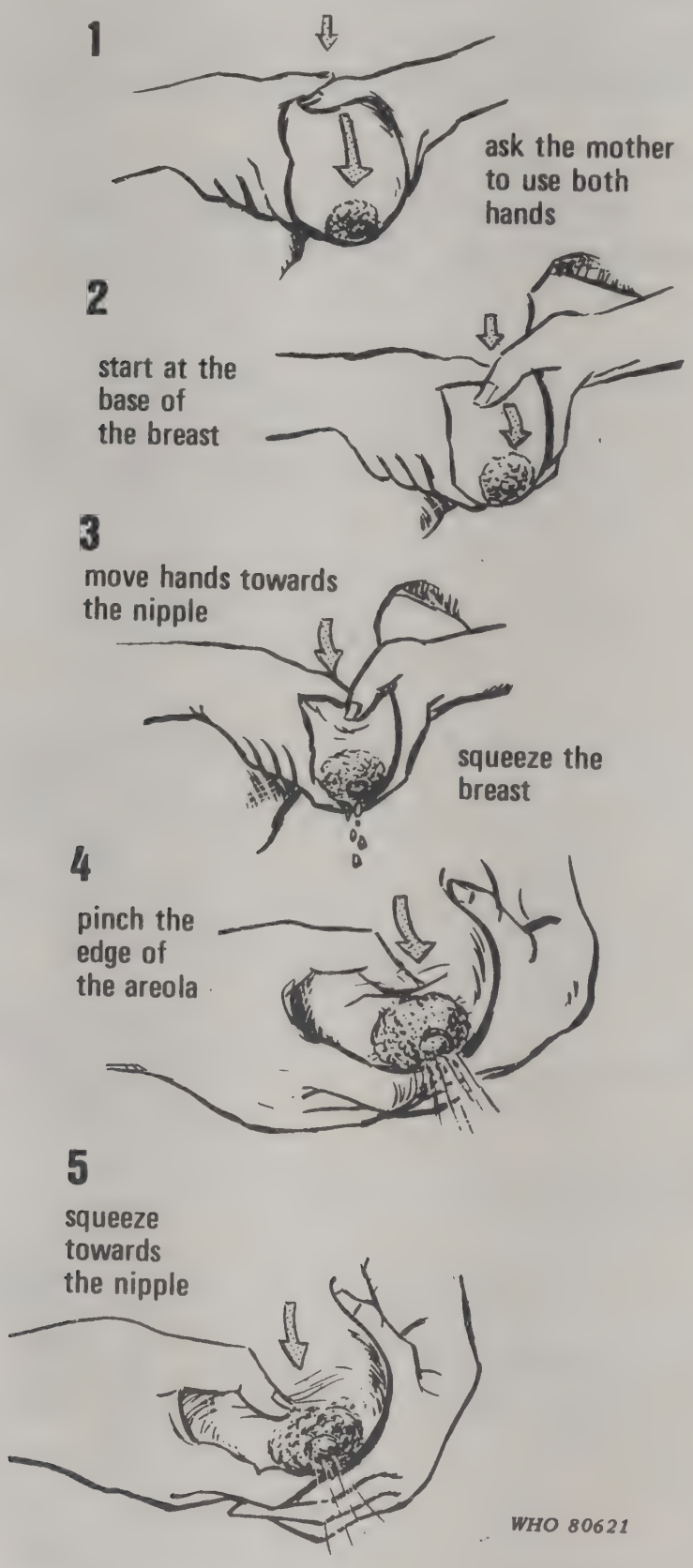


2.4.2 Swollen (engorged) breasts

Sometimes a mother's breasts make more milk than her baby needs. This is quite common in the first week after the baby is born. Sometimes the baby is too weak to suck the breasts empty. If a breast is not emptied normally, it becomes painful and swollen with milk (it becomes engorged). The skin is tight and the baby cannot put the whole areola in his mouth to suck. Sucking may be very painful to the mother. Prevent and treat engorged breasts by emptying them regularly.

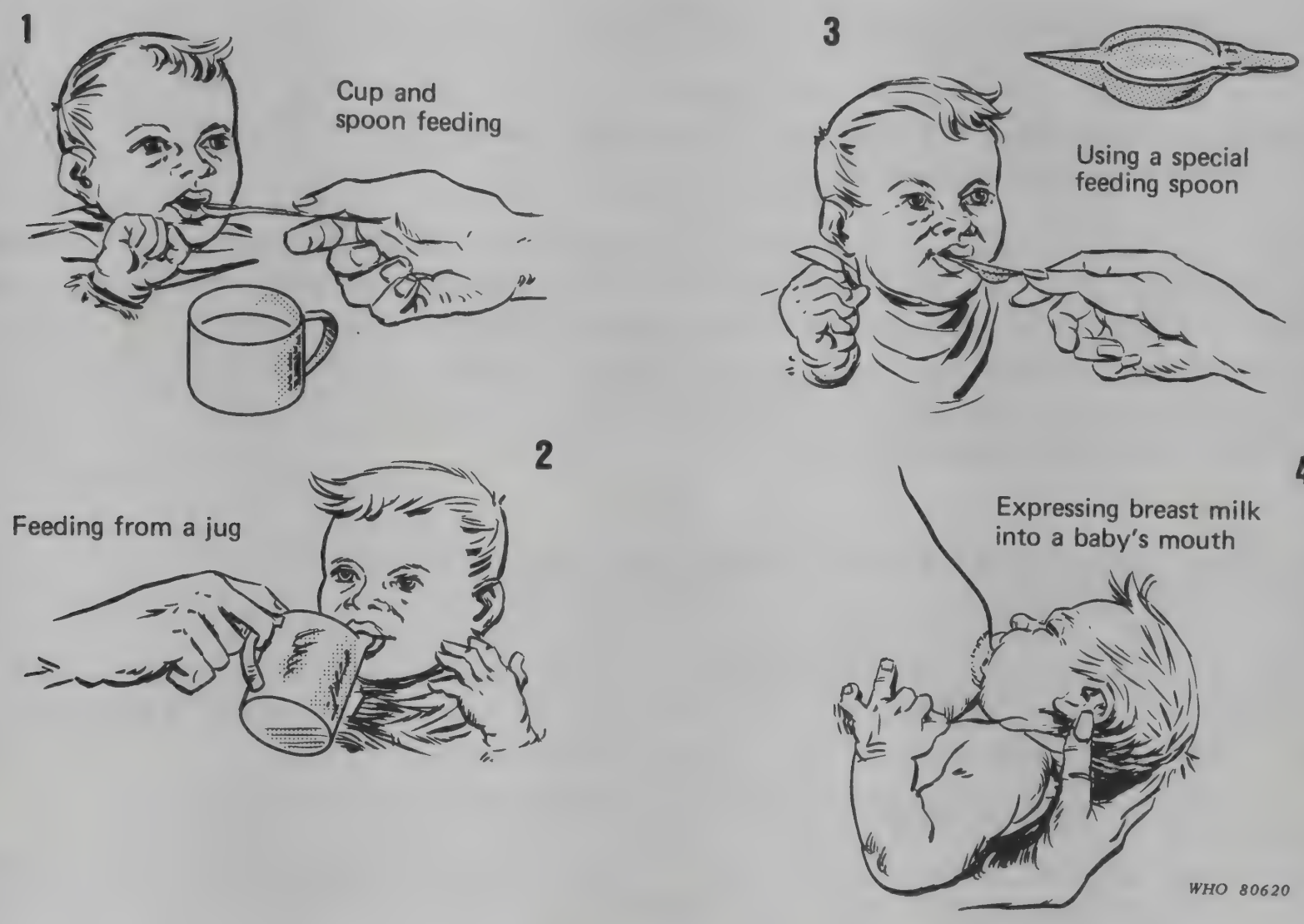
Expressing breast milk. Teach a mother to express her milk when her breasts feel painfully full (Fig. 21). She should wash her hands and find a clean cup or bowl. Using both hands squeeze gently from the base of the breast towards the nipple. Then squeeze the breast and areola between fingers and thumb and let the milk squirt into the cup. Milk must be expressed from each part of the breast. You cannot express a breast quickly.

FIG. 21 EXPRESSING BREAST MILK



An empty breast should be soft without any lumps. If an engorged breast is not emptied, the amount of milk produced by it will decrease quickly. The expressed milk can be fed to the baby in a number of ways (Fig. 22).

FIG. 22 FOUR WAYS OF FEEDING A BABY



A tender lump in the first week of breast-feeding may be caused by a blocked milk duct in the breast. Empty the breast and then gently press and empty the lump. This will prevent serious problems later.

2.4.3 Sore nipples

Nipples are very sensitive. If the skin is very soft and the baby sucks very hard, soreness develops. This happens more in women with engorged breasts and in women with small or flat nipples because the baby has to suck extra hard to hold the nipple in his mouth. Sometimes the soreness develops into a crack which is very painful. A crack is not usually due to a baby biting the nipple. Infection can get into the breast through a crack in the skin.

To prevent sore nipples keep the skin soft by rubbing the areola and nipple with some oil. Do not let the baby suck for too long at first. Change the position so that when the baby sucks the line of pressure will not always be at the same place. Make sure the breasts are emptied regularly, by expressing them if necessary. Let the nipples dry in the air after feeds.

Treat sore nipples by keeping the breasts empty. Sucking is usually too painful, and it will be necessary to express the milk. Put some antisept ointment or antibiotic (tetracycline ointment) on the crack. Let the child feed from the other breast. If necessary, give the mother aspirin or paracetamol tablets to relieve the pain.

2.4.4 Painful tender breasts with fever

Sometimes germs enter the breasts, perhaps through a crack in the nipp This causes infections. A part of the breast becomes painful, swollen, red an warm. The woman may have fever.

Antibiotics are needed and the mother should be referred to the health centre or hospital. In this case also it is important to keep the breast empt of milk by feeding or expressing. The breast will be very painful, but the baby should go on sucking. Breast-feeding should be stoppped only if there is pus coming out from the nipple. Give the mother aspirin or paracetamol tablet to relieve the pain and fever.

2.4.5 Fears that there is too little milk or that it is of poor quality

It is common for mothers to worry that they do not have enough milk fo their babies. Empty breasts on the first two or three days after birth are normal. Encourage the mothers by telling them that;

- Milk usually starts to flow on the third to fifth day
- A baby is born with plenty of water in his body and does not need to drink much in the first few days.
- The baby should be put to the breast regularly. He will get some colostrum which is good, and sucking helps the milk to come.

Often mothers of 2-6 months old babies worry that the baby is not getting enough milk, especially if the baby cries a lot. Help the mother in the following ways.

- Weigh the baby regularly. If there is steady weight gain, reassure the mother (see Module 2).
- The baby may cry for other reasons than hunger. Make sure he is not wet, cold, or uncomfortable. Crying after feeds is not usually due to hunger.
- If the baby is not gaining weight well, try first to increase the mother's milk. She should have more food, drink, and rest. Where culturally appropriate, give locally accepted herbs and drinks to increase breast milk. The baby should be put to the breast more often to feed. Help the mother to overcome any other anxieties, because anxiety can decrease her milk flow.
- Even if a mother has only a little breast milk, she must continue breast-feeding her child. Whatever breast milk she has is good, and she may have more later.

Mothers sometimes worry that their milk is not suiting the baby, or that it is of poor quality. Ignorant women and grandmothers sometimes say such things. In fact a mother's milk is just right for her baby. It contains nourishment and substances that provide protection from infections. Strong reassurance should be given because if a woman loses confidence, her milk supply may decrease.

2.5 The dangers of bottle-feeding and how to feed a baby if the mother has no milk

If the mother of a small baby has NO breast milk, or if the mother has died in childbirth, efforts should be made to find someone else who can breast-feed the child. A friend or relation may act as a wet-nurse. A wet-nurse is some woman other than the mother who breast-feeds a baby. Even if a woman is not lactating and does not have a small baby she may be able to breast-feed again. She must desire or feel it her duty to breast-feed the baby. The baby must be put to both her breasts frequently. She should also have extra food and drink. If there are local herbs believed to increase breast milk, she should use these. This process is called *relactation*. Relactation does not work with all women.

If the mother really cannot make her breast milk and a wet-nurse cannot be found, then it will be necessary to give the child artificial feeding, with milk from a cow or other animal or with powdered milk. But it is best not to feed the child from a bottle. Here are some reasons why bottle-feeding is dangerous:

- Milk is easily contaminated with germs from dirty bottles, rubber teats, spoons, water, or hands. This danger is greatest in homes where there is no running water supply and where there is little fuel or time for sterilizing the feeding-bottles and teats.
- Except for breast milk, no other milk has any agents that can protect the child from infections.
- Milk goes bad if it is not used quickly. This happens much more quickly in hot climates.
- Cow's milk and powdered milks are often diluted too much. This is because they cost so much. If they are diluted the children do not get adequate nourishment and will not grow.
- The rubber teat of the bottle may have too small or too large a hole. If the hole is too small the child may struggle to get the milk and swallow a lot of air but not enough milk. Too large a hole may cause rapid feeding and sometimes vomiting.

Here are some things that can be done to make artificial feeding less dangerous:

What a mother can do:

- Wash hands with soap and water every time before preparing the feed.

- Use other methods of feeding rather than a bottle. Feed with a cup and spoon (Fig. 23) or a jug, or a special feeding spoon.
- Wash and then boil these utensils before use. They are all much easier to clean than a bottle.
- If the milk has to be diluted or prepared (as in the case of powdered milk), use boiled water.
- Mix up only the amount needed for one feed. If too much is mixed and some of it is stored for a later feed, the danger of contamination is great.

FIG. 23

CUP AND SPOON FEEDING IS SAFER
THAN BOTTLE FEEDING

What the community health worker can do:

- Find out if the family can afford to buy the milk. If the family is poor and cannot get free milk from the health service, the baby will need milk and porridge to give him enough nourishment.
- Only teach about artificial feeding to mothers who have no chance of breast-feeding. Do not teach about artificial feeding to a group of mothers.
- Teach the mother that artificial feeds must not be used to supplement breast milk. It will only reduce the production of breast milk.

If *cow's*, or *goat's*, or *camel's milk* is used for artificial feeding:

- During the first 15 days of life: Give 1 part of boiled and cooled milk diluted with 1 equal part of boiled and cooled water.

- From 2 weeks to 4 months of age: Give 2 parts of boiled and cooled milk diluted with 1 part of boiled and cooled water.

- After 4 months of age: Give undiluted boiled and cooled milk.

(If *buffalo's milk* is used instead, the cream must be removed before the milk is boiled, since buffalo's milk contains too much fat for babies. After the cream has been taken off, follow the same instructions as for cow's milk.)

How much to feed

An artificially fed baby needs about 150 millilitres of milk for each kilogram of his own weight each day. So a very young baby weighing 3 kg will need 450 ml of milk a day. He needs feeding about 6-8 times a day; therefore he will need about 55-75 ml of diluted milk at each feed. Feed older babies 5 times a day. A 5-month-old baby weighing 7 kg will need a little more than a litre of undiluted milk a day: about 210 ml at each feed.

SOME IMPORTANT THINGS TO TEACH ABOUT

ARTIFICIAL FEEDING

Breast-feeding is the best feeding until a child is 18-24 months old, but additional foods should be given when the child reaches 4-6 months of age.

No preparation of cow's milk is as good as mother's milk.

Mixing and preparing powdered milk is very complicated. Anyone who needs to use powdered milk should have a demonstration from a trained person.

It is very expensive to feed a baby with the correct amounts of powdered milk.

3. EXERCISES

These can be done by the trainees in groups, pairs, or individually.

EXERCISE 3.1 Finding out about the infant feeding practices in the community

Using the questions in section 2.1 (page 46) of the training content of this module, ask each trainee to interview five mothers with infants and put together the collected information. This will give a picture of the infant and show what existing practices need to be corrected and how.

EXERCISE 3.2 Estimating the cost of bottle feeding

List and find out the prices of all the items needed to feed a 3-month old baby with powdered milk (tin of milk, bottle, teat, equipment for cleaning and boiling the bottle, fuel for boiling water, etc.). Calculate how much it costs to feed a 3-month old baby with the correct amount of milk for a day. Compare this cost with:

(a) the daily wage of an agricultural labourer in the area, and

(b) the cost of giving a mother 25% extra food per day (she needs this to help her make breast milk).

EXERCISE 3.3 Comparing the time taken to breast-feed and bottle-feed a child

Most village mothers have very little time to spare. They are busy with their household work and other jobs to earn money or grow food. Mothers often start work long before dawn and cannot rest until they go to bed at night. Find out how much time it takes to feed a child by bottle by doing the following exercise.

Calculate the time it takes to do all the activities necessary for artificial feeding (i.e., buying milk, fetching water, collecting fuel, boiling water, cleaning and sterilizing bottle, measuring and mixing milk, filling the bottle and feeding the baby). Bottle-feeding has to be done about 5 times a day. Calculate the time it takes to breast-feed a baby. Now compare the total time required each day to bottle-feed a baby with the time required to breast-feed him.

EXERCISE 3.4 Finding out reasons for stopping breast-feeding

Find 10-15 mothers in the area who are bottle-feeding their babies. Ask them the reasons why they stopped breast-feeding. Discuss the reasons they give. Are these the only reasons, or are there other factors which mothers did not want to tell you about? How can we decrease the influences which lead to bottle-feeding?

EXERCISE 3.5 Comparing the growth and health of children fed on breast milk and bottle milk

Select two groups of children under 1 year of age from the local community. The first group should comprise breast-fed babies and the other bottle-fed. Look at their growth charts and clinical records. Compare and discuss the weight gains and number of illnesses in the two groups.

EXERCISE 3.6 Finding out how baby foods are advertised

Find out the different ways in which companies making baby food and milk advertise their products (e.g., radio, magazines, posters, free samples, etc.). Discuss the effect of this advertising and what should be done to decrease their influence.

EXERCISE 3.7 Finding out how mothers overcome difficulties of breast-feeding

Interview mothers who are experienced at breast-feeding. Ask them about any difficulties they might have had when they started breast-feeding and how they overcame these problems (e.g., sore nipples and engorged breasts).

MODULE 4

DIETS FOR YOUNG CHILDREN

1. LEARNING OBJECTIVES

After studying this chapter, taking part in the discussions, and doing the exercises and activities, a community health worker should be able to:

o Find out how mothers feed their young children and what are their beliefs about the various foods.

o Find out what foods available in the area are suitable for feeding to children.

o Find out how the availability and prices of foods vary with the different seasons.

o Prepare and mix local foods so they can be a suitable diet for young children.

o Feed young children with an appropriate diet, and know when, how often and how much they should eat.

o Give feeding advice convincingly to parents.

2. TRAINING CONTENT

2.1 Finding out how mothers feed young children and what are their beliefs about various foods

In most tropical and developing countries mothers breast-feed their babies. Breast milk is an excellent food and this feeding should be encouraged. However, after 4-5 months, breast milk alone is not enough to make an infant grow well. Other foods are also needed. To help mothers feed their babies, it is important to know what foods mothers in the area give their young children, and what their beliefs are about these foods. Most feeding practices are part of the customs and traditions in any community. They are passed down from one generation to the next. Religious beliefs influence feeding practices. Feeding practices may also vary among different social groups, castes, etc.

When finding out about children's diets one should be sensitive about the mothers' feelings. Read again the comments at the beginning of Module 3. A friendly and sympathetic manner is important when asking questions or observing. Information should be collected systematically. Questionnaires may be useful.

A community health worker needs to know the answers to the following questions.

- What are the first foods offered to children?
- At what age is the first food other than breast milk given to children?
- How are the foods for young children prepared?
- Are there ceremonial, religious, or other reasons for giving these foods to children?
- How many times per day are children given food at different ages?
- What foods are generally forbidden for children, and why?
- Is there a communal dish from which young children must compete for food? How much food does a young child actually get? (Observe the family group at meals.)

2.2 Local foods which are suitable for young children

Find out which foods are grown in the area and which others are available in shops and markets. What are the prices of these foods? Many foods are seasonal. At certain times of the year it may not be possible to grow or buy certain things. The prices will go up and down because of variations in climate, availability, and demand. It will be useful to make lists of the

foods available and of their prices at different seasons.

Some foods are better than others for the growth and health of young children. While children are still being breast-fed they do not need many other foods. As they grow older, children need mixtures of foods. The most important groups of food in most communities are listed below.

IMPORTANT GROUPS OF FOODS IN MOST COMMUNITIES

- Cereal grains—wheat, rice, maize, millet, etc.
- Legumes or pulses—peas, beans, and lentils
- Leafy green or coloured vegetables or fruits
- Foods from animals—meat, eggs, fish, and milk
- Oils and sugar

In the place where you live and work, what foods are available from each of these groups?

Cereals are the largest part of the diet in most areas. In some places where cereals are not easily available, people eat cassava, potatoes, or bananas. These foods are not as good as cereals for growing children. Cereals and legumes cooked properly make an excellent food combination for infants.

All young children should gradually be given food from the first three groups listed above. If it is culturally acceptable, and if parents can afford it, small amounts of the animal foods can also be given, though these are not essential. Some oil added to food or cooked with it is especially useful because it gives much energy and also makes food soft and tasty.

2.3 Preparing and mixing local foods for children

Before preparing food, before eating it, and before feeding children, the hands should be washed with soap and water. Very small germs from dirty hands can be passed on to the food. These germs are not visible but they will be eaten with the food and may cause diarrhoea and other illnesses. Cooking kills most germs. After cooking, handle food as little as possible and keep it in a covered container.

2.3.1 Food for infants up to 6 months

A baby has no teeth and since he is only used to breast milk, the first foods given to him should be soft and with no strong spicy flavour (e.g. curry). If a certain cereal is the staple diet of the community, it should be used to make the first food for an infant. The cereal or cereal flour should be well cooked and mashed so that it is soft. It can be made into porridge or made very soft by adding water. In the beginning this porridge

may be very thin, but as the child grows older, the porridge should be made thicker. If much water is added, there is little strength or energy in the food. A thick porridge is more nourishing than a thin watery gruel.

If the cereal is cooked in oil, or if oil is added, it will increase the strength or energy in the food. Sugar, either white or brown, will also increase the energy in the food, but it is not as good as oil. Sweet foods are bad for the teeth.

2.3.2 Food for children 6 months to 1 year old

In the second half of the first year of life a child can take a more varied diet. Once a child is eating the cereal porridge well, cooked leguminous and other vegetables can be mixed with cereal or given separately. New items should be added to the diet one at a time. Only small amounts should be given at first. Gradually increase the quantity but do not force the child to eat more than he accepts. The vegetables should be very soft, without fibre, and mashed.

If a family eats animal foods and can afford to buy them, these can also be given. Meat or fish should be minced or finely chopped. A lightly boiled egg can be mixed with the porridge or given by itself. Milk from animals should be boiled before it is given to children. Curd is an acceptable food for children in many cultures. None of these animal foods is essential for growth and health so long as adequate amounts and mixtures of vegetable foods are given. After introducing a new food, it is good to wait for a few days before introducing another food.

2.3.3 Food after the first year

After the first year, a child is usually able to eat the food prepared for the family. In other words, he starts sharing the family diet. It is good to separate a little food on to a separate plate for a young child; care should be taken to include at least three kinds of food. In that way it is possible to see how much the child is given and how much he eats. During cooking, it may be necessary to remove a portion for a young child before adding strong spices.

The stools of a child will change when he starts eating a mixed diet. The mother should be warned about this. A healthy breast-fed child has soft yellow stools. When a child eats other foods the colour, smell, and shape of stools will change. Stools will become more like adult stools.

2.4 Feeding young children: how, when, and how often

To feed a young baby a mother needs the concern to see her baby grow healthy and well, patience, and simple knowledge about the foods available. Most mothers have the love and patience, but they may need to learn how to use available foods for their babies.

2.4.1 At what age should food (other than breast milk) first be given to an infant?

Start solid food at about 4 or 5 months of age. Until then breast milk supplies all the nourishment a young child needs.

WHEN THE BABY IS 4-5 MONTHS OLD, BREAST MILK ALONE IS NOT SUFFICIENT.
START SOLID FOODS.

2.4.2 How many times a day should a young child be fed?

At first, when the baby is still being breast-fed, give cereal porridge, 1-2 small spoonsful twice a day. The amount and the number of feeds per day should be increased gradually. By 6-9 months of age a child should be fed 3-4 times a day in addition to breast-feeds.

2.4.3 How should the meals be timed in relation to the breast-feeds?

At first, when a child is learning to take new foods, give the food when the child is hungry before breast-feeds. When the child is taking the porridge or mixtures well, give the breast-feed first, or between other meals. In this way the baby will suck the breast hard because he will be hungry. This will encourage a continued supply of breast milk. Remember, breast-feeding should continue for 2 full years if possible (see Module 3).

2.4.4 How much food should a child take at one meal?

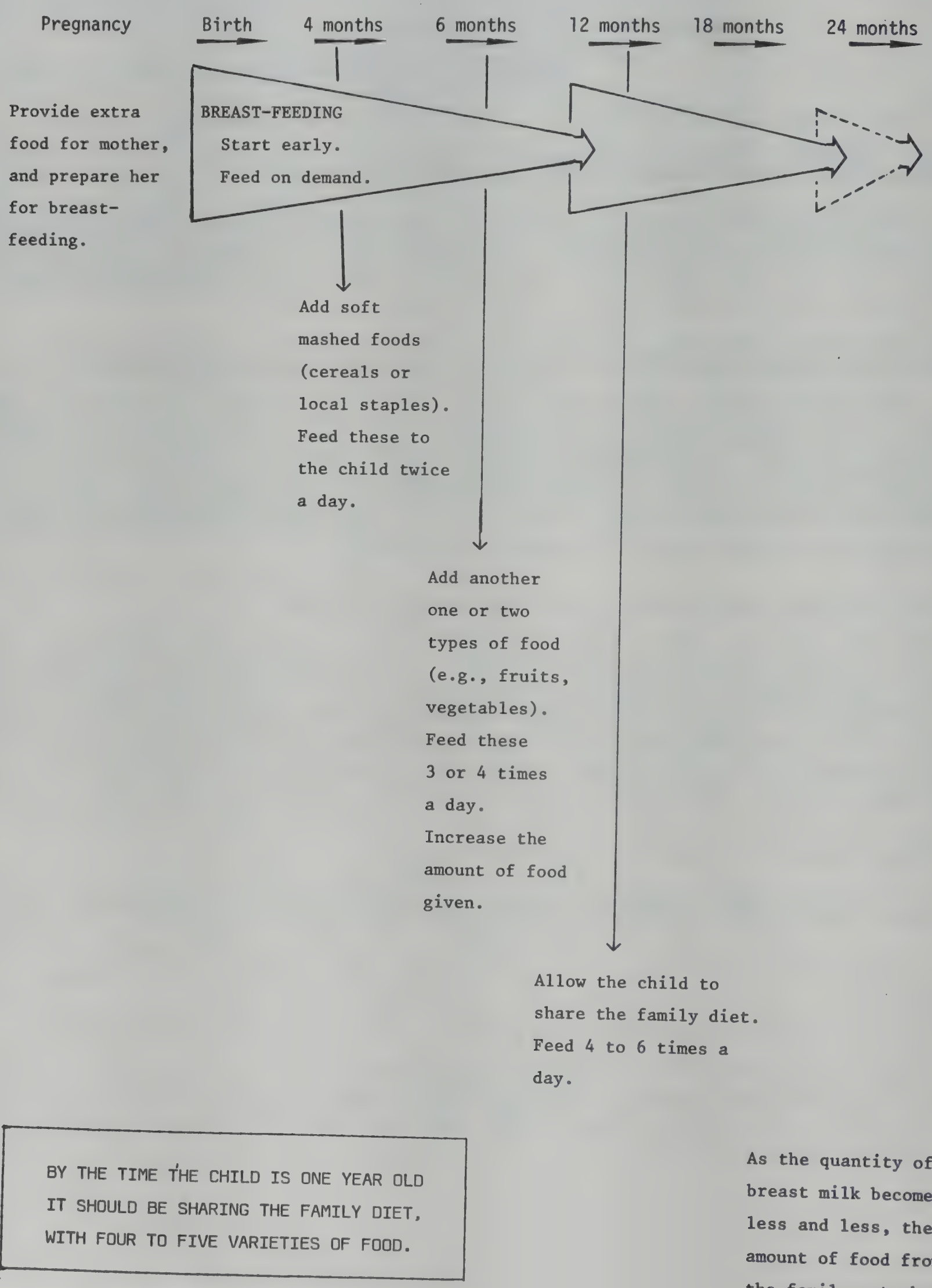
If he is just starting to eat, or if a new food is being introduced, 2 small spoonsful may be enough. Once he is used to the new food and flavour, he should be given at least 3 large spoonsful (tablespoons) of food for each meal. If he can take more, more should be given. If he is unwilling to take this amount it may be necessary to divide the amount into 2 smaller meals. If this is done, the amount preserved for the second small meal should be carefully protected from flies and dust in a covered container. It should be preserved only for 1-2 hours, not longer.

2.4.5 Feeding small children should be a priority within the family.

Feed the young child first because he eats slowly and cannot compete with older children and adults for the limited food prepared for a meal. Feed the girls as much and as frequently as the boys. By the time a child is 2 years old he or she should eat half as much as an adult. It is good for a small child to have his own plate and portion of food. When a child is ill, he still needs nourishment. He may lose his appetite, but he needs strength to get better from the illness. Time and care must be taken to help an ill child eat enough food.

A child-feeding time chart

This chart give you an idea as to how to feed children from birth up to 2 years of age. It should not be followed too rigidly.


Pregnancy
Birth
4 months
6 months
12 months
18 months
24 months
Provide extra food for mother, and prepare her for breast-feeding.
BREAST-FEEDING
Start early.
Feed on demand.
Add soft mashed foods (cereals or local staples). Feed these to the child twice a day.
Add another one or two types of food (e.g., fruits, vegetables). Feed these 3 or 4 times a day. Increase the amount of food given.
Allow the child to share the family diet. Feed 4 to 6 times a day.
As the quantity of breast milk becomes less and less, the amount of food from the family pot should gradually increase.

BY THE TIME THE CHILD IS ONE YEAR OLD IT SHOULD BE SHARING THE FAMILY DIET, WITH FOUR TO FIVE VARIETIES OF FOOD.

2.5 Teaching and convincing mothers about correct feeding

In order to teach effectively, a community health worker must not only know about the correct methods of infant feeding, but must really believe in them. She should use these methods for her own children and grandchildren. Parents in the community should be able to see that the community health worker feeds children in her family in the way she teaches others.

A friendly relationship with people is important in teaching about feeding. Some mothers may feel insulted or threatened if another person starts teaching them about feeding their children. Make friends with mothers before teaching them. Show a loving concern for mothers and their families in other ways also. The best way to learn is from a friend.

Once some women have learnt about feeding and start to feed their children in the way you have taught them, others will learn from seeing their children grow up healthy. The messages about successful feeding can thus spread within a community. Some mothers are good teachers.

How do you know if a child is getting enough food? Weigh him regularly and plot the weights on a weight chart (Module 2).

3. EXERCISES

EXERCISE 3.1 Observing a child's diet

Ask trainees to make friends with mothers who have babies between the ages of 12 and 18 months. These mothers should not be from wealthy families. The trainees should ask their permission to "observe" the babies for a whole day. They should NOT tell the mothers that they will be studying what the babies have to eat for the whole day. The trainees should base their observations on the questions given below:

How many times is the child put to the breast?

How many other feeds are given during the day?

What foods are given?

How much food is given each time?

What snacks does a child have between feeds?

Who gives the food?

How are the foods prepared and stored?

On the next day ask the trainees to discuss what they observed. After the discussion, they will have a better understanding of feeding practices and problems in that area. They will be able to plan how to help and teach mothers more effectively.

EXERCISE 3.2 Preparing food for small children

In this exercise the trainees work together to prepare a meal for about 10 children between the ages of 6 and 9 months. At least two types of food should be used.

The trainees should first plan the meal and then go and buy the necessary materials. They should be given some money for this purpose. The meal should be prepared in an ordinary home in the community. The trainees should invite about 10 mothers with children between the ages of 6 and 9 months. Once the meal is ready the trainees should help the mothers to feed the babies. After the meal they should have a discussion with the mothers on the cost of food, method of preparation, suitability of the food, and difficulties in feeding young children.

This exercise should be repeated for children between the ages of 1 to 1½ years of age. This exercise provides a teaching and learning situation both for the trainees and for the mothers. If the class is too large, the trainees c be divided into two or more groups.

EXERCISE 3.3 Feeding problems

The trainees can ask the mothers of small children what difficulties they have had in feeding children. They can find out why mothers ask for the help of older women in the community when they have feeding problems. These "advisors" can be asked about their advice. Later the trainees can meet together and discuss what they learnt from the older women. This will help them to understand and teach mothers more effectively about feeding problems.

EXERCISE 3.4 Storing food

Mothers are very busy people. They only have time to cook food once or twice a day. Small children need to eat 4 to 6 times a day. It is important to be able to store food safely for short periods. In tropical countries, if food is not prepared cleanly and stored safely, it will soon spoil. Dirty or spoilt food can cause diseases such as diarrhoea.

The trainees should find out how food is stored in homes. They should discuss together and with their supervisors if these methods are safe. They should consider how storing of food can be improved using only the utensils found in ordinary homes. The most important points to remember are to keep the food cool and properly covered so that flies and dust cannot reach it.

MODULE 5

NUTRITION OF THE MOTHER

1. LEARNING OBJECTIVES

After studying this chapter, taking part in the discussions, and doing the exercises and activities, a community health worker should be able to:

- Understand the local beliefs and practices about different foods and feeding during pregnancy and lactation.

- Explain to mothers-to-be and mothers the importance of a proper diet during pregnancy and lactation.

- Detect which mothers are at risk of malnutrition during pregnancy and lactation.

- Detect anaemia by examining the inner side of lips and eyelids.

- Advise mothers on suitable diets for pregnancy and lactation.

2. TRAINING CONTENT

2.1 Beliefs and practices about foods in pregnancy and lactation

Pregnancy is the time when a new person is being formed inside the body of the mother. The unborn child is completely dependent on the health and well-being of the mother. If a mother has some disease, the baby may be affected. If a mother does not have enough food, the baby may be small and weak.

There are many beliefs and practices about pregnancy in different cultures. Some of these concern the relationship between what the mother eats and how the child will develop. Certain foods are believed to produce a child of different characteristics: brave or cowardly, beautiful or ugly, generous or selfish, etc. There is no scientific evidence for these beliefs. However, in order to be able to advise mothers on the diet in pregnancy, it is important to understand the beliefs of mothers about various foods.

In many countries mothers believe that if they eat too much the baby will grow too big. They think that the big baby will cause a long, painful and difficult delivery. This is not true and it is a harmful belief. Even if mothers eat a lot, the baby will not grow larger than a certain size. The size of the baby is limited by the size of the womb. If a mother eats well, both she and her baby will be strong and healthy at the time of delivery.

In some cultures, pregnant women are given special foods. These foods will often be nutritious. These are good practices and we should encourage them. The husband may show special consideration for his pregnant wife. His help may be useful.

There are also special beliefs and practices about diet and breast milk in different cultures. If a mother eats certain foods it is believed that her milk may be spoilt or unsuitable for her child. Other foods are believed to increase the flow of milk.

The community health worker needs to know about all the beliefs and practices concerning food. Enquiries should be made from grandmothers and older women in the community. Customs which favour better nutrition should be encouraged and promoted when teaching about appropriate diets. Customs which are bad have to be tactfully discouraged.

2.2 Nutrition and health during pregnancy and lactation

During pregnancy the mother needs extra food in order to make the baby strong and healthy. Therefore, the mother should have a diet which contains all the raw materials needed for forming strong bones and tissues. A mother

needs not only extra food, but also certain types of food. These will be discussed in section 2.5 below.

Mothers who do not have enough food during pregnancy will have smaller babies. Their babies will have a low birth-weight. Small babies are often weak and not healthy. There are more illnesses and deaths among small babies than among larger, normal-sized babies. Low-birth-weight babies are especially at risk of becoming malnourished. Therefore it is important for pregnant women to have enough food.

If a mother has a good diet during pregnancy she becomes heavier and puts on fat. Her abdomen enlarges because her womb becomes bigger with the growing baby inside. Her breasts enlarge and get ready to produce milk. She collects a layer of fat under the skin. This is important because it is this stored fat that is used to make much of the milk in the months when she is breast-feeding. If she does not have enough food when she is pregnant, she will not store enough fat, and if she does not have enough fat she will not produce enough milk.

The diet of a woman when she is breast-feeding her child is also important. The food a mother eats is partly turned into breast milk. If she does not eat enough food, or does not eat foods with the right nutrients, she will have less milk. A mother makes 500-750 ml of milk per day. This depends on a regular supply of food. If a mother continues to breast-feed for several months without having enough food she will soon become weak.

The amount of food a mother needs in both pregnancy and lactation also depends on the amount of work she does. If a woman has to do long hours of heavy work she must have more food than a mother who does not work. During pregnancy and lactation a mother should rest more so her food can be used to help her baby grow.

2.3 Malnutrition in pregnant women

There is no precise way of detecting which mothers are under-nourished during pregnancy. There are some women, however, among whom malnutrition in pregnancy can be suspected. They include:

- women who are at a "high risk" according to a variety of factors;
- women who appear malnourished; and
- women whose previous babies have been small and malnourished.

"High risk" of malnutrition in pregnancy is found among:

- women from very poor families;
- widows or women who have been deserted by their husbands;
- women who have given birth to many babies, especially over a short period of time or if the last delivery was less than a year ago;

- women who are suffering from diseases such as tuberculosis; and
- women who gain very little weight during pregnancy.

The *appearance* of a pregnant woman can suggest whether or not she is malnourished. Observe if she is generally thin or wasted. See if there are loose folds of skin over her upper arms, chest, or abdomen, or if her arms and legs are very thin. These signs will tell you whether or not she has stores of fat under her skin. If a woman shows these signs she is probably malnourished.

All mothers suspected of being malnourished need extra help. They should be visited often. They should be encouraged to eat as much food as they can afford.

IF IRON OR OTHER FOOD SUPPLEMENTS ARE AVAILABLE, PREGNANT WOMEN SHOULD RECEIVE THESE AS A PRIORITY.

2.4 Anaemia ("weak blood") in pregnancy

Anaemia, or "weak blood", is a common nutritional problem in pregnancy. In countries or regions with high incidence of hookworm infestation, anaemia is a very common problem. Women need healthy blood to nourish their babies during pregnancy.

How to tell whether a woman is anaemic. An anaemic woman will not have enough red colour in her blood. The blood will be pale, and if we look at the inner side of the lips or the lower eyelids, they will be pale, light pink, or white. These should normally look red. If a woman is very anaemic she will easily become breathless after little exertion. Her face and feet may become swollen. Any woman in this severe condition should be referred to the supervisor or the nearest health centre. An anaemia recognition card should be provided to each trainee.

2.5 A good diet for pregnancy and lactation

During pregnancy and lactation a woman needs more food and a greater variety of food. More food is the first and most important thing. Diets based on cereals are generally good, but the woman needs more of them. She should eat one-fourth more food than she was eating before she became pregnant (25% extra). Find out how much she was eating before. Divide that into 4 portions. Tell her, or better show her, how much one of these portions is. This is the extra food she should eat, not only in pregnancy, but right through lactation. A pregnant woman or a lactating mother must truly "eat for two people".

A variety of foods will supply most of the nutrients a pregnant woman needs. The cereal grains which are suitable for her diet include wheat,

maize, sorghum, rice and millet. It is better not to use refined or polished cereals because the nutritious part of the cereals is lost during such processing. Brown rice is more nutritious than polished white rice. Similarly, brown wheat flour (whole flour) is better than white refined flour. Legumes or pulses are valuable, particularly for those who cannot afford animal foods or who do not eat them. The legumes include peas, beans, lentils, etc. Vegetables, especially dark green leafy and coloured ones, such as tomatoes and carrots supply special nutrients. Other vegetables and fruits are also useful. Edible oils and butter and its derivatives make food more tasty. They also supply energy in a concentrated form. Animal foods are valuable but not essential. Do not emphasize meat, eggs, fish, etc. in group teaching, if such foods are beyond the means of the community.

Anaemia in pregnancy can be treated by a good mixed diet, like the one described above. However, the main nutrient that is required in the treatment of anaemia is iron. It is difficult to increase very much the intake of iron with diet alone. In many countries iron tablets are supplied to all pregnant mothers. One iron tablet should be taken every day with food. In pregnancy this should be taken from at least the third or fourth month onwards. Women should be warned that if they take iron tablets regularly their stools will be black in colour. In the health services of some countries, the community health workers are given the task of stocking and supplying these iron tablets. This is good because they get early information about who is pregnant. They can visit the women, give them the tablets, and encourage them to take the tablets and eat a better diet.

3. EXERCISES

EXERCISE 3.1 Finding out and classifying beliefs

The trainees should form pairs or small groups and visit a number of elderly women in the community. They should ask them about their traditional beliefs regarding food and diet during pregnancy and lactation. The trainees should then discuss with one another what they have learnt. All the beliefs should be classified into the 4 groups given below (it will probably be found that many beliefs fall into the last two categories):

(a) good for nutrition - these should be used in teaching about nutrition.

(b) bad for nutrition - these should be tactfully discouraged or avoided.

(c) unimportant to nutrition.

(d) uncertain relationship to nutrition.

EXERCISE 3.2 Planning and setting up demonstrations to teach pregnant women and lactating mothers about nutrition

Plan and set up a demonstration for pregnant women and lactating mothers by following the instructions given below:

1. Show two bottles containing 700 ml of milk. This is the amount of milk a healthy woman can produce daily 3 months after delivery.

2. Show an average daily diet of the community. Next to it show how this diet can be made suitable for a pregnant woman and a lactating mother. In particular it should contain more food (25% more) and a better variety of food, especially green leafy vegetables. Explain the reasons for selecting certain types of food during pregnancy and lactation.

3. Demonstrate ways of increasing the nutritive value of foods commonly taken in the area; e.g., by allowing beans to sprout, by fermenting cereals and by using the water in which rice or vegetables have been cooked.

EXERCISE 3.3 Role-play concerning the beliefs about foods in pregnancy

Characters: A community health worker
Pregnant woman, accompanied by mother-in-law

The community health worker advises the pregnant woman to eat more food and a mixed diet. The woman complains that her baby will grow too big. Mother-in-law says some foods are bad in pregnancy. The community health worker assures the woman that there is no such danger. She also tells the mother-in-law gently and tactfully that some of her beliefs are not good for nutrition.

EXERCISE 3.4 Detection of anaemia cases

Ask trainees to examine the inner sides of lower eyelids and the lips of several pregnant women for anaemia. Discuss the findings with them.

EXERCISE 3.5 Pregnant mothers at risk of malnutrition

Ask each trainee to think of one woman in the community who might be at risk of malnutrition. Ask her to give reasons why that woman is at risk.

EXERCISE 3.6 Role-play concerning iron tablets in pregnancy

Characters: A community health worker
Anaemic pregnant woman who has not been taking her iron tablets
Neighbour who had a normal delivery and child without taking iron tablets.

The community health worker enquires why the anaemic woman has not been taking her iron tablets. The anaemic woman complains that she took a few tablets but she had abdominal pain and black stools. The neighbour says the woman was all right without taking any tablets. The community health worker explains and encourages the woman to continue taking the tablets.

EXERCISE 3.7 Reviewing local proverbs

Review local proverbs to see if any of them are related to feeding in pregnancy and lactation. Discuss how these can be used in nutrition teaching.

MODULE 6

IDENTIFICATION, MANAGEMENT, AND PREVENTION OF COMMON NUTRITIONAL DEFICIENCIES

1. LEARNING OBJECTIVES

After studying this chapter, taking part in the discussions, and doing the exercises and activities, a community health worker should be able to:

o Recognize the main types of protein-energy malnutrition.

o Explain the main causes of protein-energy malnutrition.

o Identify children at risk of developing protein-energy malnutrition and advise their parents.

o Manage children suffering from moderate protein-energy malnutrition, particularly by involving the parents in feeding the children better.

o Identify children with vitamin A deficiency and those at risk of developing this deficiency.

o Take action to treat and prevent vitamin A deficiency.

o Identify children with anaemia and those at risk of becoming anaemic.

o Take action to treat and prevent anaemia.

2. TRAINING CONTENT

2.1 Recognizing the main types of protein-energy malnutrition

Protein-energy malnutrition occurs when there is not enough protein and energy (two important nutrients) in the diet. Energy deficiency is probably more common and important than protein deficiency. Usually if a diet is adequate in energy, it will contain enough protein. Protein-energy malnutrition is a very common condition among children under 5 years of age in poor communities. In some countries 4 out of 5 young children have some degree of this malnutrition, and 1 out of 10 will be seriously affected by it. This means there are millions of children with protein-energy malnutrition in the world. Children with such malnutrition have a much higher death rate than adequately nourished children. Protein-energy malnutrition and infectious diseases often occur together; this is discussed further in Modules 7 and 8.

IT IS IMPORTANT TO IDENTIFY CHILDREN WITH MALNUTRITION AT THE EARLIEST POSSIBLE STAGE IN ORDER TO CURE THEM MORE EFFECTIVELY.

The fist sign of all forms of protein-energy malnutrition is growth failure. The importance and methods of measuring growth are described in Module 2 Growth failure can be seen most clearly on a child's growth chart. Weeks or months before a child looks like a case of malnutrition he will have stopped growing. Weighing a child regularly, plotting the weights on a growth chart, and noting the direction of the growth curve are the most important steps in recognizing early malnutrition. The severe forms of malnutrition are described below, but a community health worker should be able to identify cases of malnutrition at an early stage when there is growth failure.

GROWTH FAILURE IS THE EARLIEST SIGN OF PROTEIN-ENERGY MALNUTRITION

There are two severe types of protein-energy malnutrition: nutritional marasmus (Fig. 24) and kwashiorkor (Fig. 25).

Marasmus. Children with marasmus are very thin and wasted. They have been called "skin and bone children". The fat under the skin has been used up, and there are loose folds of skin over the arms, legs, and buttocks. The muscles are wasted and as a result the arms and legs are thin and all the bones stand out. The abdomen is distended, partly because the abdominal muscles are weak. The face is also wrinkled and the bones stand out. The child looks like a "worried old man". The hair is usually normal in colour, but may be rather sparse (not thick). Marasmic children are usually hungry.

FIG. 24 A CHILD WITH MARASMUS

FIG. 25 A CHILD WITH KWASHIORKOR

Other features can be seen clearly in the growth chart of a typical marasmic child (Fig. 26). The growth failure starts early in life (most marasmic children are between the ages of 6 and 24 months).

Malnutrition is a chronic condition. When a child has been malnourished for a long time the growth failure can be seen in several ways. He is not only thinner (wasted), but also shorter (stunted) than a normal child of the same age (Fig. 27).

Children fed on bottle milk from the early months of life often develop marasmus. This is usually because the milk is diluted too much. Diluted milk does not have enough energy in it. Furthermore, the milk is fed through dirty bottles and as a result the children often suffer from diarrhoea. This leads to nutritional marasmus, and the children weigh about half the weight of healthy children of their age.

Kwashiorkor. This is the more serious form of protein-energy malnutrition. The most evident sign of this condition is body swelling (called oedema), especially swelling of the forearms, hands, legs and feet. The face, abdomen, and genitals may also be swollen. It is possible to make a mistake and think that these children are fat. Test the swelling over the front of

FIG. 26 A GROWTH CHART OF A TYPICAL CHILD WITH MARASMUS

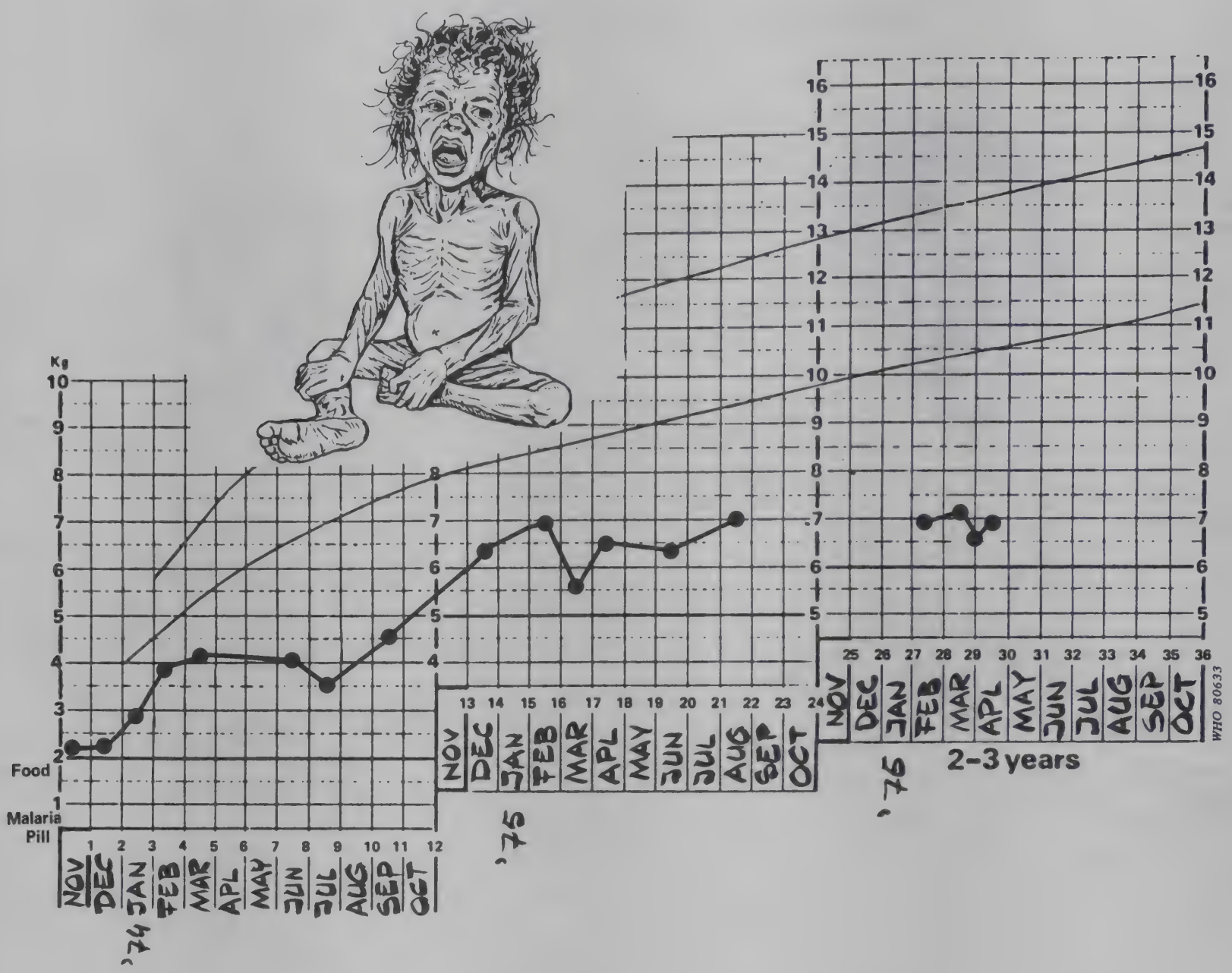
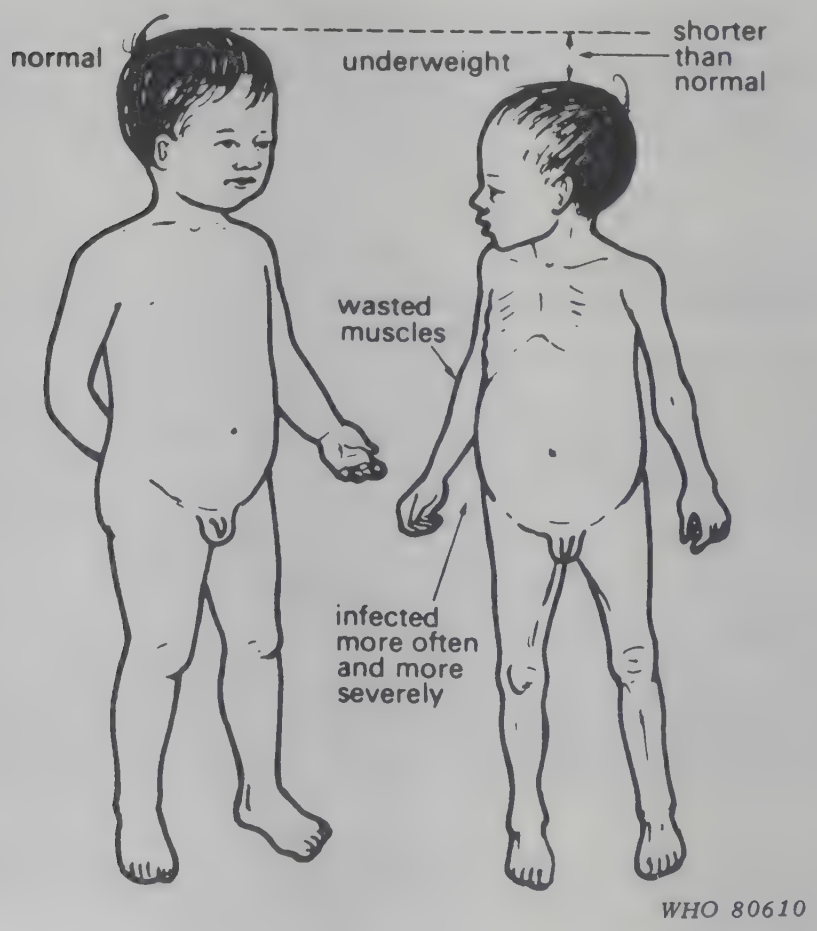


FIG. 27 CHARACTERISTICS OF THE UNDERWEIGHT CHILD

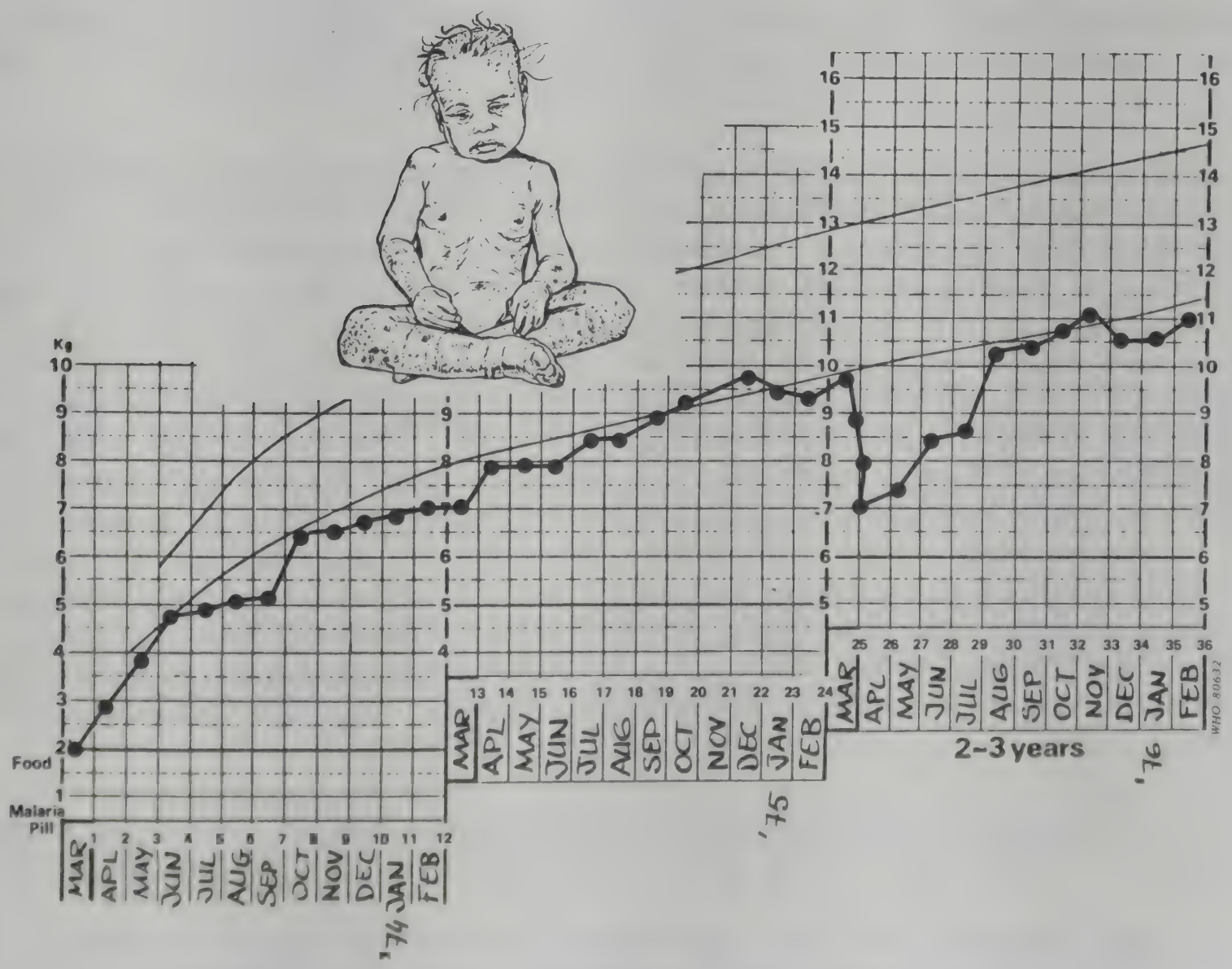


the lower leg bone. Press with your thumb for half a minute. There will be a hollow depression when you remove your thumb. This does not happen with a child who is just fat.

Children with kwashiorkor are always unhappy and often irritable. Many of them cry for long periods. They sit still and take no interest in anything, not even in food. Many of them have no appetite. Some children with kwashiorkor have abnormal skin and hair. The skin is often paler than normal, and over the legs there may be lines and cracks. Sometimes the skin peels off in small pieces like old paint. Some children have sores from which a fluid flows. The hair of some children with kwashiorkor is pale, brownish, orange or blonde, sparse, and the hairs are thin and break easily.

Kwashiorkor is also associated with other conditions, including infections. The growth-chart of a typical child with kwashiorkor is shown in Fig. 28. Kwashiorkor may occur at a later age than marasmus, often in children between 18 and 48 months old. In Fig. 28 notice that the child was growing quite well until he was over 2 years old. Then he had an attack of measles, and soon after that he developed kwashiorkor. Children with kwashiorkor may also have anaemia and vitamin A deficiency that affects the eyes (see sections 2.5 and 2.7 below).

FIG. 28 GROWTH CHART OF A CHILD WITH KWASHIORKOR



While examining a child suspected of suffering from kwashiorkor, look carefully at the upper arms, shoulders, and chest. If there is wasting and the bones stand out, the child is said to have marasmic kwashiorkor. Becaus of the swelling, the wasting of the legs is not seen.

The signs of protein-energy malnutrition (wasting, swelling, changes in skin and hair) are all quite easy to see. Remember, however, that the most important and early sign of malnutrition is growth failure. This will only be detected if children are weighed regularly and their weights are plotted on growth charts each time they are weighed.

REGULAR WEIGHING OF
CHILDREN IS THE BEST
WAY TO DETECT
PROTEIN-CALORIE MALNUTRITION

2.2 Understanding the causes of protein-energy malnutrition

Malnutrition is caused by a number of complex and closely related facto which relate to the social and economic condition of the family. Some of th factors are: *poverty*, *ignorance*, *superstition*, *lack of food*, *inadequate hygiene* (lack of cleanliness), and occurrence of *infectious diseases* in the area where the family lives. The interrelationship of these factors is comp and the community health workers need not go into its details. However, the factors cause specific problems about which a community health worker can do something.

The simplest way of understanding how these factors cause the developme of protein-energy malnutrition is to take an example of a typical family in poor community. The family can be big or small. Since the family is very poor both the mother and the father have to go out to work, and often the mother is away from home for the whole day. Their small baby is left at hom without any breast milk or any good alternative food for the period the moth is away. Since the baby does not suck frequently enough at the mother's breasts the mother is not producing enough milk. The family has some incorr beliefs (superstitions) about feeding any solid food to the child until he i 1 year old. The parents are ignorant about immunizations. As a result the baby is not getting enough breast milk or any other alternative food, he is left alone without his mother, and he is not receiving any immunizations: the combined effect of all these things is protein-energy malnutrition. It is important to note that the community health worker can do a number of things to reverse the effects of poverty, superstition and ignorance on this child.

We have been considering some of the general factors that lead to mal-nutrition. Let us look now at *specific factors:*

- Age. Between the ages of 6 months and 48 months, the risk of protein-energy malnutrition is great because the child is growing fast. There can also be many feeding problems.

- Sex. In many cultures boys are valued more than girls for social and economic reasons. Girls may be consciously or unconsciously neglected.

- Many children. In large families there is often less food for each person. The smaller children may be neglected because the mother has too much work.

- Short interval between births. If a mother becomes pregnant when her previous baby is only 6 months old, she may neglect the first child. Her breast milk will get less and her time and attention will be concentrated more on the new baby.

- Low birth-weight. Babies who are born small have not had enough nourishment in their mother's womb. Many of them become malnourished.

- Twins. These children have a combination of high-risk factors. They are small and may receive only half as much milk and attention from the mother as a single baby.

- Poor growth in the first few months. This can only be judged by weighing the baby regularly. A child should gain at least 500 grams a month in the first 3 months of life. Many children who gain less weight become malnourished. There may be a number of reasons for this, but the most important is the mother's failure to breast-feed.

- Failure or stoppage of breast-feeding. This may be inevitable if the mother dies soon after the baby is born. Often, however, the mother stops breast-feeding because of the false belief that bottle feeding is modern and therefore good.

- Delay in introducing additional food. Breast milk is best and should be given up to 2 years of age. However, other foods should be added after 4 months and increased in amount as the child grows older. If this is not done growth will slow down, and this may be the start of malnutrition.

- Infectious diseases, especially repeated diarrhoea, whooping cough, or measles. The damage due to these diseases themselves, to wrong treatment, and to lack of food because it is often wrongly thought that a sick child should eat less frequently results in malnutrition.

The risk factors in different communities will vary. Study the background factors in the families of malnourished children. This will show what are the specific causes of malnutrition in a particular area.

2.3 Identifying children at a high risk of developing protein-energy malnutrition

A community health worker is responsible for the care of every child born in the community. For each child she must ask herself "Is this child at high risk of malnutrition?" If the answer is "Yes", time and care must be concentrated on that child.

Modification and improvement of the diet is the method which a community health worker can use to manage malnutrition. This is called *nutrition rehabilitation*. But it will fail unless the family, and especially the mother of th child, cooperate actively. Convincing the parents that a modified diet is essential for the child may be the most difficult task of the community health worker. A community health worker may know what food a child should eat, but the mother must also believe in this and must be willing to make the best use of foods available to the family. Involving the family in the process of recovery is the best way to teach about malnutrition and prevent its recurrence. The parents will learn about better nutrition by seeing their children recover and become healthy.

Some instructions for the better feeding of malnourished children are:

- Give more of the food you are already giving. This is particularly useful if the child is already eating a mixed diet of cereal and legumes, and preferably some vegetables.

- Increase the number of meals per day. This is one good way of giving the child more food. A child with malnutrition should eat 6 meals a day. Each meal should be substantial and not simply a snack.

- Increase the variety of foods being given. If a child is mainly eating cereal and legumes, gradually add leafy green and other vegetables.

- Add edible oil to the diet if possible. This can be vegetable oil or butter. This will not only increase the strength or energy of the diet, but also make it tasty and acceptable and as a result, the child will eat more.

- If possible, give some foods which come from animals. Even small amounts of egg, milk, meat or fish will help a malnourished child recover rapidly. Usually foods from animals are expensive and poor families do not eat them regularly. Emphasize that these foods are not essential, but will help when the child is seriously malnourished.

REGULAR WEIGHING IS A GOOD WAY TO KNOW THE PROGRESS OF A MALNOURISHED CHILD

The effects of better feeding can be very encouraging to both the parents and the community health worker. This can be seen by regular weighing of the child. Watch for the improvement in weight and discuss this with the parents.

Supplementary feeding programmes can be used specifically to help malnourished children. In many countries there are special programmes in which milk or meals are distributed to children below school age. To make the most of the food and nutrients available in these programmes they should be specifically provided to malnourished children and high-risk children. In such re-organization of food resources the community health worker will need the help of the health supervisors and community leaders. Mothers should understand that the needs of a malnourished child are urgent, and the supplementary food should not be shared with the whole family.

Consider two extreme examples. The only boy child born to the village chief (who owns much land and whose wife is a healthy high-school graduate) has a very low risk of becoming malnourished. On the other hand, the twin daughters of an unemployed labourer whose wife died soon after giving birth to these children are at a very high risk of becoming malnourished and dying. The community health worker must visit these girls very often. Whoever looks after the girls will need much help and encouragement.

Sometimes all the malnourished children may belong to one specific group in the community. For example, these may be the children of landless labourers and their mothers may be illiterate. In such a situation the community health worker should concentrate her attention on that group.

How can the community health worker help the high-risk children and their mothers? The main resources of a community health worker are her knowledge about feeding children and her desire to help. She should make friends with mothers of children at high risk. She should visit these children frequently, especially from 4 months of age. That is when mothers should start introducing other foods. She should gently and repeatedly advise about feeding (see Module 4). Finally she should weigh the children each month. The supervisor should visit the community occasionally and show interest in the progress being made; this will encourage the community health worker and the persons she serves. A programme of visits can be worked out according to the number of children to be visited. In a programme in one large community, visits were made monthly until the malnourished children in that community were 5 months old, then every 2 days until the children had started taking food regularly several times a day, and then about once a week to make sure that the amount of food was being increased. This simple schedule greatly reduced the numbers of malnourished children in that community. Simple nutritional knowledge combined with concern and compassion can achieve much.

2.4 Management of children suffering from protein-energy malnutrition

Two groups of children need special help from the community health worker. The first - children at risk of developing protein-energy malnutrition - have been considered above. The second group is the *children already suffering from protein-energy malnutrition*. They can be identified by regularly visiting the homes of high-risk families, by observing growth-curves of children, and by examining children with infectious diseases like measles and diarrhoea.

A COMMUNITY HEALTH WORKER CAN HELP MOST CHILDREN WITH MILD OR MODERATE MALNUTRITION

The help of the community may be required for some poor families. The community health worker and the health supervisors may be able to persuade community leaders and wealthy farmers to help. These people may provide food for specific children or families in need of urgent help. In the end better nutrition of the whole community will depend on education and on social and economic development, but there are many useful things a community health worker can do immediately.

SOME CHILDREN NEEDING SPECIAL CARE SHOULD BE REFERRED TO THE SUPERVISOR OR HEALTH CENTRE

Some children need very special care because their lives are in great danger. These children should be referred to the supervisor or the health centre. However, they will still need the support and help of the community health worker. The children who need to be referred to the supervisor or the health centre are described below.

(1) Children with severe malnutrition. These include very wasted marasmic or greatly swollen kwashiorkor children who will not eat.

(2) Children with complications of malnutrition. These include children with anaemia and eye damage due to vitamin A deficiency (see sections 2.5-2.8 below), and children with signs of infections, high fever, distressed breathing, and repeated diarrhoea.

(3) Children with moderate malnutrition who do not improve with the feeding and help suggested below. These are children who have some infection which is difficult to diagnose, e.g., tuberculosis.

2.5 Identifying children in danger from vitamin A deficiency

A young child needs protein and energy in food to build tissues and to b healthy. To remain healthy the body also needs small amounts of special substances. These are called vitamins and are found in various foods. Vitamin A is one of these special substances which is especially important for the healt of the eyes in small children.

Vitamin A deficiency is the main cause of blindness in some countries. Blindness in children can result in a life-time of misery. Blind children can not care for themselves and they are a burden on the family. Many blind children are neglected and become malnourished and die. The community health worke can do much to improve this sad situation. She can identify children suffering from early vitamin A deficiency and can recommend treatment. She can prevent vitamin A deficiency by giving suitable dietary advice.

When a child or a person has vitamin A deficiency he cannot see very well in the dark. This condition is called "night blindness". Ask mothers if they have noticed that their children cannot see properly in late evenings or in semi-darkness. In some areas this disease is so common that there is a local name for it.

Examine the eyes carefully. A child who has vitamin A deficiency has dry and slightly rough eyeballs. Normal eyeballs are moist, smooth, and shiny. The condition of rough and dry eyeballs is called *xerophthalmia*. This is the early stage of vitamin A deficiency. Later, foamy patches appear on the sides of the eyeballs. These are called *Bitot's spots*. These spots may persist even after treatment.

At these early stages, an improved diet can prevent serious eye damage. It requires considerable practice to detect vitamin A deficiency. Supervisors should work closely with community health workers in detecting the early signs until the community health workers are well trained.

In the later stages the eyeball becomes soft and an ulcer may form. The eye finally bursts and is permanently damaged.

Certain groups of children are at special risk of vitamin A deficiency. These include children with protein-energy malnutrition and children with certain infections. Measles affects many body tissues including the eyes. Diarrhoea affects general nutrition and also the absorption of vitamin A from the bowel. Vitamin A deficiency often appears after measles or diarrhoea. If the community health worker knows who may develop the deficiency she can act to prevent the disease.

2.6 Action to treat and prevent vitamin A deficiency

2.6.1 Treatment of vitamin A deficiency

Vitamin A deficiency should be treated urgently. Xerophthalmia can develop from dry eyes and lead to total eye damage within a very few days. If a child has dry eyes, the community health worker should act quickly.

- Give an oily preparation of vitamin A (200 000 International Units) by mouth. This may be in the form of drops or a capsule. This form of vitamin A is absorbed nearly as fast as a dose of vitamin A in water given as an injection. In some countries community health workers keep stocks of such vitamin A.
- If no vitamin A is available, take or send the child to the nearest health centre or a place where it is available.
- Teach the parents of children treated with vitamin A for dry eyes about prevention.

2.6.2 Prevention of vitamin A deficiency

Prevention can be for an individual or a community group that is at risk of vitamin A deficiency.

- An appropriate diet is the most important preventive measure.
- Vitamin A can be made in the body from a compound called carotene, which is found in vegetables and fruits. A lot of carotene is found in yellow or orange vegetables and fruits, leafy green vegetables, and red palm oil. Vitamin A is present in animal products such as eggs, liver, milk, and fish-liver oils.
- Vitamin A supplementation programmes have been started in some countries. In these programmes all children between 6 months and 5 years of age should receive oily preparations of vitamin A (200 000 International Units) by mouth, every 6 months. This may be in the form of drops or capsules. Such large doses of vitamin A can cause some children to feel unwell for a brief period. They may have headache, vomiting, and fever. The effects however, pass off quickly. Give the child half a tablet of aspirin and reassure the mother. It is dangerous to give a bigger dose, or to give vitamin A more often than once in 6 months. Keep vitamin A preparations out of reach of children. It is important to record how often these big doses of vitamin A are given to children.
- When using individual growth charts, a large A should be written at the bottom of the column of the month in which the dose was given. In this way it is easy to see when the last dose was given, and when the next dose is due.

ALL CASES OF VITAMIN A DEFICIENCY
IN CHILDREN SHOULD BE TREATED URGENTLY

2.7 Identifying children with anaemia and those at risk of becoming anaemic

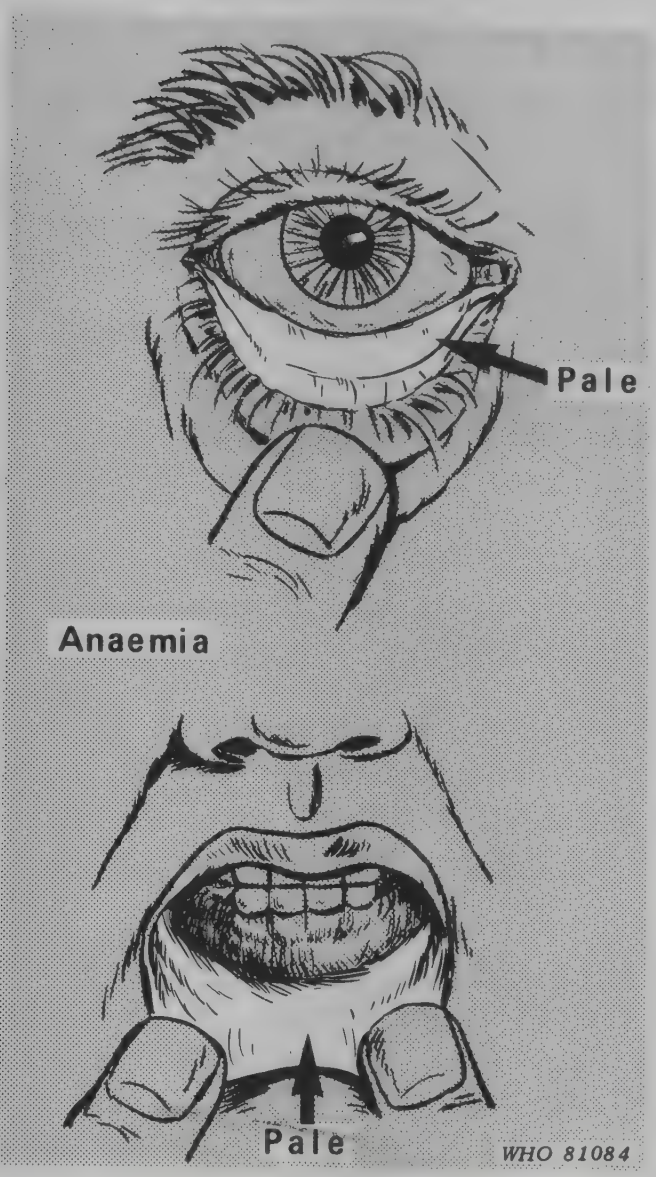
2.7.1 Children with anaemia

An anaemic child has weak or pale blood. Many children in tropical countries are anaemic.

How can a child with anaemia be identified? A child with anaemia is les active than a normal child. He may be pale, and if the condition is severe, he will be breathless and have some swelling of the face, body, and limbs. The best way to detect anaemia is to examine the inside of the lips and the inside of the lower eyelids. They will be pale, light pink, or whitish instead of red (Fig. 29). A good time to gently pull down a child's eyelids and look at the colour is when the child is feeding at the breast. Anaemia is a very common disease among poor children. The above test is very simple and every sick child should be examined for anaemia.

FIG. 29

WHERE TO LOOK FOR SIGNS OF ANAEMIA



There are many possible causes of anaemia in children:

- The most common cause of anaemia is a diet deficient in food that contains iron. The body cannot make enough blood if it does not have enough iron. A growing child needs a lot of iron. He needs iron to make blood, but his main food is milk, which contains very little iron. Unfortunately, many children do not much like the foods which are rich in iron, for example, leafy green vegetables.
- A child may become anaemic because of loss of blood. Often the blood loss is not seen. For instance, a child may lose much blood because he has worms in his intestines which suck the blood.
- Anaemia may result from red blood cells being damaged in a number of ways. Malaria parasites are one serious cause of damage to blood cells.
- Anaemia may also occur in babies if they start life with too small a store of iron. If a mother is healthy, in the last weeks of pregnancy she will pass on to the baby a store of iron. If the mother is anaemic, she will not have much iron to pass on to the baby. If the baby is born prematurely, he will not receive the store of iron.

2.7.2 Children at risk of anaemia

From the causes of anaemia it is possible to identify the groups of children at risk of this disease. They include children who are premature (born early), those with anaemic mothers, those who have been fed too long only on milk, and those who have not been given a mixed diet including iron-containing foods. Children who are not protected from parasites, particularl malaria and hookworm, will develop anaemia.

2.8 Action to treat and prevent anaemia

2.8.1 Treatment of anaemia

- A diet which is rich in iron-containing foods like leafy vegetables i a good start, but it is unlikely to provide a high enough dose of iro for severe anaemia.
- Iron tablets easily increase the intake of iron. If the community health worker has a supply of iron tablets for children, she should give 1 tablet 2 or 3 times a day according to the severity of anaemia

Occasionally iron tablets upset digestion. This effect is less if the i tablets are taken at the same time as food. Warn mothers that their chilren' stools will be black while they are taking iron tablets. Iron tablets can cause harm if many tablets are taken at once. Always keep iron tablets out of reach of children. It is best to keep iron and other medicines locked in a cupboard.

- In severe cases of anaemia the patient is swollen, breathless, and very pale. These children or adults should be referred to a hospital They need special care, and possibly blood transfusion.
- Treatment of any cause of blood loss or damage is essential. Obviously it is a waste only to increase blood production. Malaria and hookworms should be treated. The possibility of these infestations should be thought of in any case of anaemia. It will be necessary to take or send patients to a health centre or hospital for diagnosis and treatment of such infections.

2.8.2 Prevention of anaemia

- A good diet during pregnancy is the foundation for prevention of anaemia. This will build up the mother's iron supply so that she can pass on a full amount to her child in late pregnancy. It will enhance full development of the child in the mother's womb and decrease the chance of a premature birth.

The diet should be rich in iron-containing foods - leafy green vegetable legumes, whole grain cereals, and crude sugar. If animal products are accept able and can be afforded, eggs, meat, and liver can be given. Pregnant women frequently need supplements of iron tablets in addition to a good diet (see Module 5).

- Premature babies have inadequate iron stores and should be given small doses of iron in the first 3 months of life. Suitable iron mixtures will have to be obtained from a health centre.
- Infants should have a mixed diet containing iron-rich foods from about 6 months of age (see Module 4).
- Hookworm infestations can be prevented by improved hygiene, use of latrines, and wearing some form of footwear.
- Malaria control measures are being undertaken in many countries. Some services use anti-malarial tablets to prevent malarial infections. If this is being done in the community, issue anti-malarial tablets to children and record it on the individual growth charts.

3. EXERCISES

EXERCISE 3.1 Identifying malnourished children in the community

In this exercise the trainees carry out a survey to identify all malnourished children below the age 5 years in a community. There are two important points to consider. First, the survey should cover the whole community. Secondly, each trainee should visit at least 10 homes.

At each visit the trainee first counts the total number of children in the family. Then she notes down the number of children below the age of 5 years. Now by either measuring the upper arm circumference (see Module 2) or by looking at the growth charts of the children and judging from either the weight of the child at its present age or the angle of the growth curve, she decides which children are malnourished. One of these two methods should be decided upon before undertaking the survey but it should be remembered that measuring the upper-arm circumference is not really suitable for children less than 1 year old. Upon completing the survey the trainees add up their results and discuss the following questions.

(1) What proportion of children below the age of 5 years in the community are malnourished?

(2) How can these children be helped?

(3) How often should the community health worker visit each child?

(4) Do most malnourished children come from one group in the community?

EXERCISE 3.2 Identifying children with marasmus and kwashiorkor

If any moderate to severe cases of marasmus or kwashiorkor are detected while Exercise 3.1 is being done, ask the permission of the parents of these children to allow the whole training group to see the children. Then discuss how the appearance of these children differs from that of healthy children of the same age.

In the second part of this exercise the trainees work in pairs. Each pair is given an illustration showing one of the two conditions. The trainees are then asked to answer the following questions.

(1) What kind of malnutrition does the child in the illustration have?

(2) What nutrition education would you give to the parents of this chil

Ask the trainees to exchange the illustrations and correct each other's answers.

EXERCISE 3.3 Identifying causes of malnutrition and their prevention

In this exercise trainees can work in pairs or singly. They visit the homes of children diagnosed as having moderate or severe malnutrition. Ideally, one whole day should be spent in or near the home. The purpose of the visit is to try and find out why the child became malnourished by observing how the family lives. In preparation for this visit, the trainees should outline the types of information to be collected.

The trainees should then meet, present the observations they have made in the different families, and discuss the findings. Particularly, they should consider, for each family, what changes in the way of life would prevent the child from becoming further malnourished. The following questions will be useful in the discussion.

(1) Will it help to change the pattern of meals (frequency and timing of meals) in the home?

(2) Are the parents spending their money on the right kinds of food?

(3) Is the child immunized against the childhood diseases? If not, will immunizations help?

EXERCISE 3.4 Detection of anaemia and vitamin A deficiency

The trainees with their supervisor should visit a nursery school, baby clinic, or an outpatient hospital where there are many small children. With the permission of the person in charge, they should examine the eyes, the lower eyelids, and lips of all the children there. Probably some children will show signs of anaemia and vitamin A deficiency. The normal children can be compared with those who have deficiencies.

Remember it is important to help the families of the children who are found to have anaemia and vitamin A deficiency. They should receive advice about diet and, if possible, vitamin A and iron tablets.

EXERCISE 3.5 Visit to a nutrition rehabilitation unit

If possible the trainees should work in a nutrition rehabilitation unit for some days. The purpose of these units is to:

(1) help malnourished children recover; and

(2) teach parents of malnourished children (and also health workers) how best to feed children so that they grow well.

In such a unit the trainees will see how local foods are prepared in order to make them especially suitable for small malnourished children, how often the children are fed, and how much they need to eat. This will give

the community health worker confidence to show parents and tell them about better ways of feeding children.

EXERCISE 3.6 Developing positive attitudes of women towards feeding children green and yellow vegetables and fruits

The trainees should interview a number of women to find out their attitudes and beliefs towards feeding children green and other vegetables. There are often strong beliefs about feeding children these items. The trainees should then discuss how to overcome any problems they find. For example, are leafy vegetables acceptable to mothers and children when mixed in a curry? Are carrots and pumpkins acceptable when made into a sweet?

EXERCISE 3.7 Role-plays about diet and malnutrition

The signs of kwashiorkor

Characters: A mother
A child with kwashiorkor
A clinic nurse

The mother describes how she believes her child became ill. The child displays the characteristics of kwashiorkor, acting miserable, apathetic, etc. The nurse points out the features of the illness and explains what caused it and what can be done to help the child to recover.

Changing the family diet pattern

Characters: A mother
A father
A grandmother
A community health worker

The purpose is to show how to overcome the personal desires and prejudices of different family members. Father wants the sort of food that he likes. Mother wants to make changes for the sake of her malnourished child. Grandmother objects, saying that certain foods will be bad for the child. The community health worker advises gently and helps to find a compromise within the cultural pattern with which the family members agree. There is scope for the use of proverbs, jokes, and songs.

EXERCISE 3.8 Identifying a family at high risk of malnutrition

Each trainee should describe one family she knows in which she believes the children are at high risk of malnutrition. She should explain why she believes it is a high-risk family.

MODULE 7

DIARRHOEA AND NUTRITION

1. LEARNING OBJECTIVES

After studying this chapter, taking part in the discussions and doing the exercises and activities, a community health worker should be able to:

o Explain the causes and dangers of diarrhoea.

o Detect children who have lost much water and salts because of diarrhoea (dehydrated cases).

o Decide which children need to be referred for special treatment.

o Treat children with diarrhoea by preparing and giving special fluid by mouth (oral rehydration solution).

o Advise about feeding during diarrhoea.

o Involve parents in preventing and treating diarrhoea.

2. TRAINING CONTENT

2.1 What is diarrhoea?

Diarrhoea is a condition in which stools are passed more frequently and are more loose or watery than is usual for the person. People vary in the sort of stools they pass, and in how often they pass them, but as a general guide, three or more loose or watery stools in a day can be considered as diarrhoea. Frequent passing of normal stools is not diarrhorea. Breast-fed babies often have stools that are very soft, but this too is not diarrhoea.

A mother usually knows when her child has diarrhoea. When diarrhoea occurs, mothers may say that their children's stools smell strongly or pass noisily, as well as being loose or watery. By talking to mothers a useful local definition of diarrhoea can often be found.

Diarrhoea is most common between 6 months and 3 years of age. It is also common in babies less than 6 months old who are drinking animal milk or infant feeding formulas.

It is an illness that requires immediate action. It should never be neglected.

2.2 Why is diarrhoea dangerous?

The two main dangers of diarrhoea are death and malnutrition.

Death from diarrhoea is usually caused by losing large amounts of water and of salts from the body in the frequent watery stools. This is called *dehydration* (see section 2.4). Small children with severe diarrhoea lose water and salts fast and can die quickly, sometimes in a few hours. Many children with diarrhoea recover by themselves, but they become weaker.

Malnutrition can be caused by diarrhoea, and makes it worse, because food passes too quickly through the body for it to be absorbed and because a person with diarrhoea usually feels too ill to be hungry and so does not eat. In addition, diarrhoea is more severe and more common in people who are already suffering from malnutrition.

In many communities it is a common practice to starve children when they have diarrhoea. This is wrong because it causes malnutrition, which will make the child have dairrhoea more frequently. To prevent children with diarrhoea from becoming malnourished it is important to give them correct treatment and proper nutrition.

2.3 What causes diarrhoea?

Diarrhoea is caused by infection of the bowel by very small germs or organisms that cannot be seen by the eye. They enter the mouth and then the

the bowel through dirty hands, dirty food, dirty milk, dirty water, dirty feeding bottles, dirty cooking pots and feeding vessels, and so on. Some of them are also passed out in the stools and so may infect other people.

2.4 What causes dehydration?

The body takes in water and salts from drink and food. When the bowel is healthy, the water and salts pass from the bowel into the blood and are then carried to all parts of the body to be used. The water and salts that the body does not need, and what it has used up, it loses through the stools, urine and sweat; it may also lose some by vomiting.

When there is diarrhoea, the intestine does not work normally and the water and salts pass into the blood more slowly, or not at all. Therefore the body does not take up as much of them as it needs to replace what it is losing, and more than the normal amounts are passed in the stools. Thus the body is drained of water and salts; this is dehydration.

The more diarrhoea a person has, the more water and salts he loses and the more he is dehydrated. A lot of vomiting and sweating can also cause dehydration. Dehydration occurs faster in hot climates and when there is fever.

2.5 Detecting children who have lost much water and salt from diarrhoea (dehydrated cases)

All children with diarrhoea are in danger. Many children recover, but some become seriously ill. Who are the children who need urgent care? Four of the things to do to find them are: ask, look, feel, and weigh.

Ask: How long has the child had diarrhoea? How many stools has he had in the last day (24 hours)? Have these been large and watery stools? Has the child vomited? The longer a child has had diarroea and the more he has passed stools and vomited, the more serious his condition is. Is the child thirsty? Has he had anything to drink? If he is thirsty, he is dehydrated and needs extra fluid. When did he last pass urine? How much urine and what colour was it?

Look: Can the child drink? Is he irritable or drowsy? Are the eyes sunken? Is the breathing fast and deep? Are the mouth, tongue and eyes dry? These are signs of a dehydrated child. Has he passed little urine or dark yellow urine? That is a sign of dehydration. If his stools are large and watery, the dehydration will be worse.

Feel: Is the skin elastic? Pinch up a fold of skin over the shoulder, abdomen or thigh. When you let it go, it should spring back like rubber. If it does not return to its normal shape immediately, the child is dehydrated. He needs fluid quickly. In a child with marasmus this test is not reliable since the skin is already

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TABLE 1. IS THERE DEHYDRATION?

		SIGNS	SIGNS	DANGER SIGNS
1. ASK	DIARRHOEA	Less than 4 liquid stools per day	4-10 liquid stools per day	More than 10 liquid stools per day or Much blood and mucus
	VOMITING	None or small amount	Some	Very frequent
	THIRST	Normal	More than normal	Unable to drink
	URINE	Normal	Small amount, dark yellow	No urine for 6 hours
2. LOOK	CONDITION	Well, alert	Unwell, sleepy or irritable	Very sleepy, floppy, unconscious, having fits or convulsions
	EYES	Normal	Sunken	Very dry and sunken
	MOUTH and TONGUE	Wet	Dry	Very dry
	BREATHING	Normal	Faster than normal	Very fast and deep
3. FEEL	SKIN	Pinch fold goes back quickly	Pinch fold goes back slowly	Pinch fold goes back very slowly
	PULSE	Normal	Faster than normal	Very fast, weak, or cannot be felt
4. WEIGH (if possible)		No weight loss during diarrhoea illness	Weight loss of 25-100 grams for each kilogram of weight	Weight loss of more than 100 grams for each kilogram of weight
5. TAKE TEMPERATURE (if possible)		-	-	High fever: more than 39°C (102°F)
6. DECIDE		If the child or adult with diarrhoea is like this there is <u>no dehydration</u>. USE TREATMENT PLAN A (page 108)	If the child or adult with diarrhoea has 2 or more of these signs there is <u>dehydration</u>. USE TREATMENT PLAN B (page 109)	If the child or adult with diarrhoea has 2 or more of these <u>danger signs</u> there is <u>severe dehydration</u>. USE TREATMENT PLAN C (page 110)

wrinkled and not elastic. Feel the pulse. If it is fast and weak, the child needs more fluids. Feel the arms and legs. If they are cold when the weather is not cold, this is a bad sign; he needs urgent help. Is the child hot? Take the child's temperature, if possible.

Weigh: If a child has a growth-chart and has been weighed regularly (see Module 2), this is useful. A child who has diarrhoea and has lost weight is probably dehydrated. Five per cent dehydration is serious (that is, if he has lost 50 grams for each kilogram of his normal body weight). Ten per cent dehydration is very serious (that is, if a 10-kg child has lost 1 kg).

It is important to know if a child is only mildly ill or seriously ill because this affects the action you should take. A child who has mild diarrhoea can be treated at home, but a child who has severe diarrhoea, dehydration, and complications should be sent to the nearest health centre for special treatment. The signs of mild or severe dehydration have been summarized in Table 1.

2.6 Deciding which children need special treatment

There are three groups of children with diarrhoea who need special treatment:

- Those with severe dehydration.
- Those with other diseases and complications of diarrhoea.
- Those who have not improved with the treatment described in section 2.7 below given by the community health worker.

The community health worker should know these three groups. A child in any of these groups should be sent as soon as possible to a supervisor, health centre, or hospital.

2.7 Treating children with acute diarrhoea

The danger of acute diarrhoea is loss of water and salts from the body (dehydration). The treatment for dehydration is to replace the water and salts (rehydration). If the child takes this extra water mixed with the right salts by mouth it is called oral rehydration.

The best mixture for this is a solution made from standard Oral Rehydration Salts (ORS for short). These come in packets which should contain:

Ingredient	Amount
Glucose (a form of sugar	20 grams
Sodium Chloride (ordinary salt)	3.5 grams
Sodium Bicarbonate	2.5 grams
Potassium Chloride	1.5 grams

Packets that contain this amount of ingredients are made for mixing in one litre of clean drinking-water. This mixture is called ORS solution.

DEHYDRATION IS DANGEROUS IN DIARRHOEA.

DEHYDRATION IS CAUSED BY LOSS OF WATER AND SALTS FROM THE BODY.

YOU CAN SAVE A CHILD BY REHYDRATION.
REPLACE THE LOST WATER AND SALTS BY MOUTH.

2.7.1 Preparing Oral Rehydration Salts solution

First, wash thoroughly a large pot or other container in which the ORS solution can be kept. Wash, too, a cup or other small vessel from which the child can drink the solution, and a mixing spoon. Pour 1 litre of clean drinking-water (boiled and cooled water is safest) into the pot.

Open the packet of Oral Rehydration Salts and pour the powder inside it into the litre of drinking-water. With the clean spoon, mix the powder until it has completely dissolved in the water. To make sure the mixture is correct, taste it; it should taste less salty than tears. If it is more salty, add a little clean water or throw it away and mix another amount according to the instructions. Every community health worker should have a regular supply of packets of Oral Rehydration Salts and a litre measure.

2.7.2 If there are no Oral Rehydration Salts

If there are no packets of oral rehydration salts, a very young child should continue to be breast-fed. The slightly older child may be given weak tea, green-coconut water, barley water, rice water diluted with clean drinking water, thin vegetable soup (made with carrots or peas, for example), or even plain water.

Community health workers should also be taught how to make up rehydration solution on their own. This is not always simple, because it is important that the amounts of sugar, salt and water are correct. In different areas or different cultures, the quantity of sodium chloride in the local salt and the quantity of glucose in the local sugar may be very different.

As a general rule, 40 grams of ordinary sugar and 4 or 5 grams of common salt should be mixed with 1 litre of clean drinking-water. But it is essential that the correct proportions should be worked out for each area before the community health worker is instructed in how to apply it in the home she will visit.

2.7.3 Protecting the rehydration solution

Protection of the prepared solution is important. Use the fluid on the

day it is prepared. Keep the container in a cool place and keep it covered at all times so that flies and dust cannot get in. Throw away any fluid that was prepared the day before.

2.7.4 How to give the solution to the child

Give small amounts of the solution to the child every few minutes. The best way is to give 2-3 small spoonfuls from a cup, wait 2-3 minutes, then give again. In this way, the child is less likely to vomit. If he does vomit, wait 5-10 minutes, then give again. Vomiting is not a reason to stop treatment with Oral Rehydration Salts solution, unless it is severe and frequent. In that case the child should be taken to the nearest health centre.

Patience and persistence are very important in feeding a sick child with fluids. When the child improves, he may drink from a cup.

2.7.5 How much Oral Rehydration Salts solution to give

It is important to know how much solution should be given to treat dehydration and to prevent further dehydration. Table 2 gives guidelines for this purpose. These are guides only. If a child (or an older person) wants more, give more. If the eyelids become puffy during rehydration, stop giving Oral Rehydration Salts solution but continue giving other liquids - weak tea, barley water, etc. Start giving ORS solution again when the puffiness has gone if diarrhoea continues.

TABLE 2. A GUIDE TO HOW MUCH ORAL REHYDRATION SALTS SOLUTION TO GIVE

Patient's weight in kilograms:	3 5 7 9 11 13 15 20 30 40 50					
Patient's age:	2 4 6 8 10 12 18 months		2 3 4 6 8 years		15 adult	
To treat dehydration, in first 4-6 hours give:	200 to 400 ml	400 to 600 ml	600 to 800 ml	800 to 1000 ml	1000 to 2000 ml	2000 to 4000 ml

2.8 Feeding during and after diarrhoea

Many mothers and others in a community believe that feeding a child with diarrhoea is dangerous. This is a wrong belief. Children need food to restore strength and replace the loss caused by diarrhoea.

If the child is being breast-fed, the mother should continue to breast-feed him. Breast milk is safe, clean, and nourishing. Breast milk should be given between drinks of Oral Rehydration Salts solution.

NEVER STOP
BREAST-FEEDING DURING DIARRHOEA

If the child is on cow's milk or artificial formula, this should be diluted to half-strength with clean water. It should be given between drinks of Oral Rehydration Salts solution. Full-strength milk should be started again when diarrhoea stops.

If the child normally takes solid food, he should still be given food. Simple soft easily digestible foods (porridge, etc.) can be given. Small frequent meals should be given between drinks of ORS solution. Feeding a child who is ill requires extra patience, time, and care.

After recovery from diarrhoea, extra food should be given. Try to give one extra meal each day for 7 days in order to recover what has been lost.

2.9 How to involve parents and relations in the treatment of a child with diarrhoea

Explain to the parents and relations in simple words what diarrhoea is and how it can be treated. Tell them how you are examining the child and what are the signs of dehydration. Show them how to prepare the rehydration fluid and ask for their help in its preparation. Once the solution is ready, taste it yourself and ask the parents to taste it also. They should notice that it is not as salty as tears.

Some mothers may fear that giving fluids may make the diarrhoea worse. Reassure them and explain that the water lost from the body should be replaced. If this is not done the child's life may be in danger.

Encourage the mother to use a cup and a spoon to feed the solution to her child. Teach the parents, if possible using a flip chart, everything they need to do to care for a child with diarrhoea.

Provide the mother with packets of Oral Rehydration Salts. If the diarrhoea is severe and the home is far away, give the mother more than one packet. She should use these until her child is completely well or until he is seen by you again. Advise the mother to bring the child back if his condition gets worse, if vomiting becomes severe, or if he cannot drink. If possible, the mother should always bring back the child the next day. This is to make sure that the child is getting better and to repeat the teaching about rehydration, feeding, and prevention.

2.10 How to prevent diarrhoea

Breast-feeding protects against diarrhoea and other infections. It also provides excellent nutrition. Do not bottle-feed. Bottles are difficult to clean and germs grow easily in milk.

BREAST-FEEDING IS THE BEST WAY TO PREVENT DIARRHOEA

Diarrhoea germs come from stools. If stools are passed where people cannot come into contact with them, the germs will not spread to others. Latrines should be built, used, and kept clean.

Dirty hands cause diarrhoea. Wash hands with soap and water before feeding a child, preparing serving food, and after passing stools. Fingernails should be kept clean.

Dirty contaminated food can cause diarrhoea. Freshly cooked food is clean. Preserve food by covering it completely and keeping it cool. Food prepared earlier or the day before may be contaminated by germs. It should be cooked again before being given to children.

Dirty water can cause diarrhoea. Water for drinking must be clean and should be kept in a special pot with a cover. Never put hands in drinking-water. Drinking-water for small children should be boiled.

Flies can carry the germs of diarrhoea. Flies settle on stools, pick up germs and then settle on food. Cover food to protect it from flies. If children pass stools near the house, the stools should be removed and covered with earth. Keep the house and surroundings clean and there will be few flies.

TREATMENT PLANS AGAINST DEHYDRATION IN DIARRHOEA

TREATMENT PLAN A

(There is no obvious dehydration)

Tell the mother that she has done well to bring the child before he became very ill.

Explain to the mother about the signs of dehydration.

Tell her to give extra breast milk and extra liquids, including water, to the child to prevent dehydration.

If the child is older than 4 months, also give it other foods such as soft boiled rice, boiled and mashed potatoes, and thin soup made of rice, lentils, or vegetables.

Tell the mother to watch for the signs of dehydration which you have just asked, looked and felt for. If any signs appear she should come to see you again immediately.

TREATMENT PLAN B

(There is dehydration.)

The water and salts which have been lost from the body must be replaced with Oral Rehydration Salts solution made from packets of the salts.

First, look at Table 2 and see how much Oral Rehydration Salts solution should be given for the child's weight or age.

Tell the mother to give this amount in 4-6 hours and show her how to give the solution.

After 4-6 hours ask, look and feel again for the signs listed in Table 1.

If there is still some dehydration tell the mother to give the same amount of ORS solution again in the next 4-6 hours. If the dehydration has become worse, continue the ORS solution and send the child immediately to the nearest health centre.

If you have continued the rehydration solution for a second 4-6 hours you will have to ask, look and feel for the signs of dehydration again at the end of the second round. If the dehydration shows no signs of improvement tell the mother to continue to give the ORS solution and send the child immediately to the nearest health centre.

Even when the signs of dehydration have gone (after 4-21 hours of ORS solution), the solution should be continued in the same amounts as long as the diarrhoea continues. This is maintenance treatment to prevent dehydration from coming back. During maintenance give extra breast milk, other liquids and food as in Treatment Plan A.

TREATMENT PLAN C

(There is severe dehydration or another serious problem that needs special treatment urgently.)

If the child can drink, start ORS solution as in Treatment Plan B.

Give the mother some prepared ORS solution and tell her to continue giving it to the child on the way to the health centre, as long as the child can drink.

Send the child with the mother to the nearest health centre, immediately.

3. EXERCISES

EXERCISE 3.1 Plastic bag model to demonstrate diarrhoea and dehydration

Take a clear plastic bag with no tear or hole in it. With a felt-tip pen (the kind with waterproof ink) draw a picture of a baby on it (Fig. 30). Fill the bag with water; the picture of the baby will be full and well-rounded, like a healthy child. Now make a small hole in the lower part of the bag with a pin. As water flows out, the bag and the picture will become wrinkled. This shows what happens to a child who has diarrhoea and becomes dehydrated.

Ask a trainee to pour water into the bag faster than it is flowing out of the hole. This shows what happens with oral rehydration; the picture of the baby will become normal again. Now seal the hole with a piece of tape or sticking plaster so that the water stops flowing out. This shows that the diarrhoea has stopped and no more rehydration is needed.

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FIG. 30
PLASTIC BAG MODEL
TO DEMONSTRATE DEHYDRATION

A clay pot with a hole underneath or low on one side may be used as a model instead of the plastic bag. Plug the hole with a stick or a cork. Hang the pot from a weighing scale and fill it with water. Removing or loosening the plug, show how the weight becomes less as the water flows out (diarrhoea and dehydration), and how the weight increases again as more water is poured in at the top (rehydration). Ask the trainees to make a note of the weight when the pot is full, when some of the water has drained out, and when the pot has been filled again and the plug has been put back. Make sure that the weight is the same at the end of this exercise as it was at the beginning.

This exercise can be used by community health workers to teach parents about dehydration and rehydration. They should take the opportunity to discuss with the parents the causes and dangers of diarrhoea and the means of preventing it.

EXERCISE 3.2 Growth-charts of children with diarrhoea

Ask the trainees to bring in the growth-charts of 5-10 children who have had diarrhoea, or ask them to draw such charts themselves. They should note what happened to the children's weights when they had diarrhoea and discuss the reasons why the weights dropped. They should consider what can be done to improve the situation in the families concerned and in the community.

EXERCISE 3.3 The litre and household measures

It is important that each standard packet of Oral Rehydration Salts should be mixed into 1 litre of water - not less than a litre nor much more than a litre. But it is not easy to judge how much water makes 1 litre when it is poured into household vessels of different shapes and sizes. It is difficult, too, to know what amount of salt or sugar weighs a given number of grams. This exercise will give community health workers practice in judging quantities. They should do this exercise while they are training and repeat it often when they are working on their own in the community.

Obtain a measuring vessel on which an exact 1-litre quantity is marked. See which local vessels hold 1 litre by pouring water from them into the 1-litre measure until the level reaches the 1-litre mark. Pour a measured litre into the household vessels and place a mark on them at the level the water reaches. Trainees can have competitions to see who can guess which local vessels most nearly hold 1 litre. They can also guess the level at which the 1-litre mark should be placed on those vessels.

Provide the trainees with an accurate weighing balance, salt and sugar in the form used locally, and a number of locally available small containers (large and small spoons, bottle caps, cups, etc.). Let them practise weighing given quantities of salt and sugar and ask them to find out what weight of each the containers hold.

EXERCISE 3.4 Different concentrations of Oral Rehydration Salts (ORS)

Mix 1 packet of Oral Rehydration Salts in exactly 1 litre of water. Take four more packets and mix one of them with $\frac{1}{4}$ litre, another with $\frac{1}{2}$ litre, another with 2 litres, and the last with 3 litres. Pour these different solutions into a row of glasses that look the same. Give each trainee a spoon, and ask them to taste all the concentrations until they can easily tell which is the right one to use (1 packet in 1 litre). They should note that this is not more salty than tears. This exercise can be made a competition.

Remember that it is dangerous to rehydrate a child with too strong a concentration of salts. It is safer to rehydrate with a more dilute solution.

EXERCISE 3.5 Calculating how much fluid to give a dehydrated child

One trainee states the weight and condition of an imaginary child with diarrhoea and dehydration. Another trainee in the group should look up Table 2 and Treatment Plan B to work out what action to take and how much fluid to give. Here is an example:

First trainee: "A child weighing 7 kilograms has diarrhoea and is dehydrated".

Second trainee: "From Table 2, I see that this child should receive 600 ml of Oral Rehydration Salts solution in the first 4-6 hours; and Treatment Plan B shows that he should then receive another 600 ml of solution spaced out over 24 hours every day until the diarrhoea stops. This is the maintenance treatment, and the child should also be given extra breast milk or soft or mashed foods as part of the maintenance treatment".

EXERCISE 3.6 Role-plays

There are many suitable variations. The trainees can make up some from their own experience of difficult situations. Here are some examples of difficult situations that can be used in role plays:

- A mother does not want to give her child oral rehydration because he has vomited.

- The grandmother of a child says that the mother should not breast-feed the child because he cannot digest the milk when he has diarrhoea.

- The parents of a child with diarrhoea come asking for an injection to make the child better.

- A man has built a latrine for his family. His neighbour laughs at him. The child of the family with the latrine is healthy but the child of the neighbour gets diarrhoea.

EXERCISE 3.7 Gaining experience in diagnosing and managing diarrhoea

In order to gain experience it will be useful for the trainees and the supervisor to visit a clinic where many cases are seen daily.

The supervisor will demonstrate the signs of dehydration in a child with diarrhoea. The trainees should look for these signs in other children attending the clinic. Practise observing children with diarrhoea.

The trainees should help the mother of a dehydrated baby in the clinic. They should ask the mother's permission to feed the baby the rehydration solution with cup and spoon. It is good to have this experience in a clinic before promoting it in homes.

The trainees should advise mothers at the clinic on how to feed their babies with soft foods and other liquids in addition to the rehydration solution.

EXERCISE 3.8 The watered-plant model

Two young pot plants can be cared for by the trainees for a few days. One is watered regularly; the other is not. The one without water starts to wilt, but the other looks strong and healthy. If the wilted plant is given water it will recover and look healthy again. This can be used to illustrate the need for water. The illustration can be speeded up by using two cut plants, one in a vase with water and one in a dry vase.

EXERCISE 3.9 The amount of water makes the difference

A bottle containing firm loamy earth is shown to the trainees. "Does the earth look like diarrhoea?" "No". Add plenty of water and shake it up. "Now does the earth look like diarrhoea?" "Yes". The difference is the amount of water it contains. This is used to emphasize that loose stools contain much water and dehydration results.

EXERCISE 3.10 Local beliefs and practices regarding diarrhoea

During field training, each trainee should each visit 2 or 3 families and enquire about the beliefs about diarrhoea, factors which influence the condition, and how it is managed in the homes. They should also note the families' reactions to the recommendations about treating diarrhoea by oral rehydration. All the trainees can then share their experiences and discuss how to make oral therapy acceptable in the community.

MODULE 8

NUTRITION AND INFECTION

1. LEARNING OBJECTIVES

After studying this chapter, taking part in the discussions, and doing the exercises and activities, a community health worker should be able to:

- Explain some important relationships between infectious diseases and nutrition, including:

  how infections affect nutrition, and

  how malnutrition makes the body weak so that infection is worse or more frequent.

- Find out all about the communicable illnesses in the community - which infections are common, serious, treatable, and preventable.

- Help to treat patients with infectious diseases.

- Help to control diseases by taking a leading part in the local immunization programme.

2. TRAINING CONTENT

2.1 The body's defences against infection

Many diseases are spread by germs which can cause infection. Germs are very small creatures that cannot be seen with the naked eye. Germs are around us everywhere - in the air, in water, and on nearly everything we touch, even on our skin. Some germs are harmless, but others are harmful and attack the body.

Dangerous germs can pass from one person to another in different ways. If someone has a disease in his chest or throat, he coughs. When he coughs, germs go into the air. If someone else breathes them in, he may also develop the same disease. Tuberculosis and measles are passed on in this way. If someone has diarrhoea he may pass many germs or parasites in his stools. If the stool comes into contact with water, the water is contaminated, and when someone drinks this contaminated water he may also get diarrhoea. These diseases which are passed from person to person are called *"infectious diseases"* (they are sometimes called "communicable diseases").

The body has many defences against infections. The skin keeps out many germs, and fluid from the nose and throat catch and kill many others. The digestive juices kill many germs that are swallowed. There are also very special defence mechanisms that work against specific germs. For example, if a child suffers from measles and recovers, he will never get measles again. During the illness the body has made a substance that kills measles germs; this remains in the body and if, later in life, measles germs attack again, the special substance will kill them. This person is protected and is said to be *"immune to"* or *"immunized against"* measles. In childhood everyone has many infections. While overcoming the infection we become immunized and protected against attack by the same germs in the future. Unfortunately, in the case of some diseases one attack does not give a life-time protection. For example, people can have a cold or diarrhoea repeatedly.

2.2 How infectious diseases affect nutrition

We considered the effects of diarrhoea on nutrition in Module 7. We will now consider the effects of measles on the nutrition of a child. This will indicate how nutrition and infectious diseases are related.

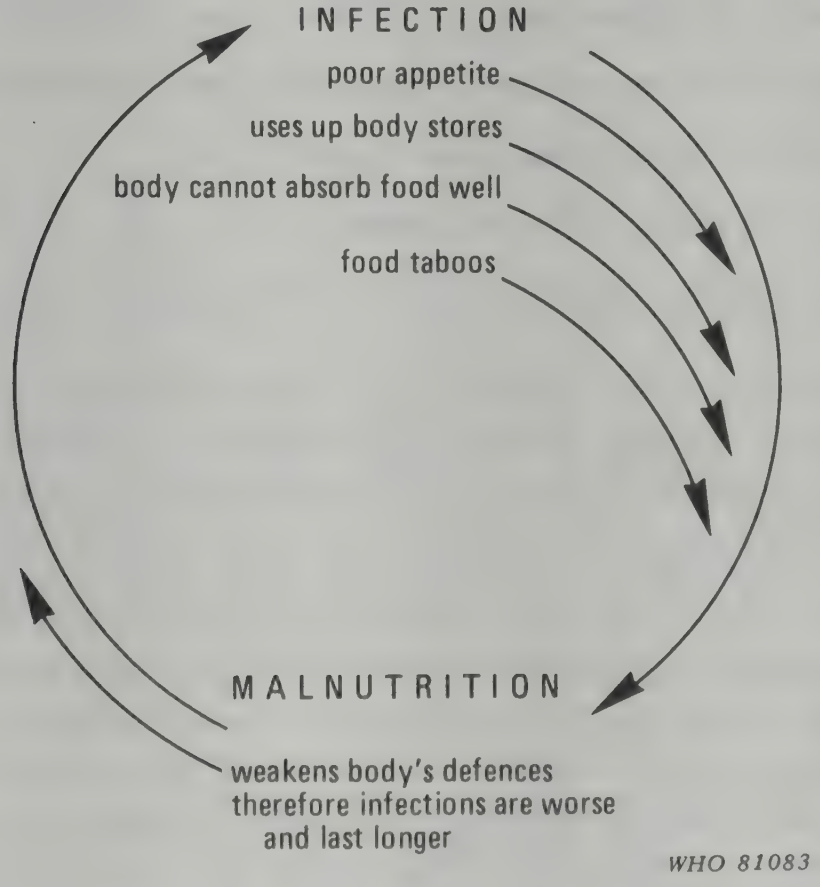
Measles is an infectious disease that attacks children mainly when they are between 9 months and 5 years of age. In some countries it is an important cause of death among young children. Measles germs travel through the air from a child who has the disease to another child who is not protected against measles. About a week or two later the child has a fever, running nose, and cough. After about 4 days a red rash appears on the neck and face, later spreading to the rest of the body. Some children become very ill with sore mouths, bad cough, fast and difficult breathing, diarrhoea, and sometimes unconsciousness. Usually the fever becomes less some days after the rash appears, and the child gradually recovers. During recovery the rash disappears. Sometimes the top layer of the skin peels off in small flakes.

THE BODY NEEDS MORE ENERGY IN FEVER

Measles is a common cause of malnutrition. The fever and illness make the child lose his appetite, and he also refuses food because his mouth is sore. During fever the child uses more energy than normal, but because little food is being taken in, the body has to use up its own tissue for energy. A number of children with measles also develop diarrhoea. In some countries people believe that it is harmful and wrong to feed a child who has measles and so children may be starved for days or weeks. It is not surprising, therefore, that many children with measles lose a lot of weight and become malnourished. This can be clearly seen on the growth charts of children who have had measles - see, for instance, Fig. 28 in Module 6. Many children die because of the combined effects of measles and malnutrition.

Fig. 31 illustrates how infection increases malnutrition at the same time as the malnutrition makes the infection worse. To break this circle of illness, it is necessary to treat both conditions; treating only one of them gives poor results.

FIG. 31 THE CIRCLE OF INFECTION AND MALNUTRITION



Apart from the example of measles, what other common infectious diseases should the community health worker look for? The answer to this question will be different in different communities, but Table 3 shows nine important infectious diseases that affect the nutrition of children in various ways. The diseases are listed in the first column approximately in the order of how much harm they do to the nutrition of a child. The second column gives some of the main symptoms of the diseases (the symptoms in brackets are not always present). The third column indicates how the diseases may cause malnutrition.

The fourth column shows the treatment that is needed. For several diseases (such as diarrhoea, measles, and whooping-cough) there are a number of simple ways in which the community health worker can provide the treatment or advise the family. For some other diseases (such as malaria and tuberculosis) speci medicines are needed. If the community health worker suspects that someone has a disease for which a special medicine is needed, she should refer the pa tient to the nearest health centre or hospital. The fifth column lists ways of preventing these diseases. Preventing disease is one of the most importan responsibilities of the community health worker and it is discussed later in this Module.

MALNOURISHED CHILDREN GET MORE INFECTIONS
WHICH ARE MORE SEVERE AND LAST LONGER

2.3 What are the important infectious diseases affecting the community?

In order to make plans to treat and prevent infectious diseases in a com munity, the community health worker first needs to know:

- Which infectious diseases occur and what are their local names?
- At what ages do they occur? During which season do they occur?
- Which of them are serious and fatal?
- How are they treated in the community?
- Do the people eat a special diet when these diseases occur?

This information can be obtained by interviewing people and by observing the trends of diseases during different seasons. During the first year of her work a community health worker should pay particular attention to the dif ferent types of illness in the community. She should make a careful note of the illnesses occurring among the families she is responsible for and she should note how many cases of each illness there are. In large communities where there are several community health workers, monthly meetings should be arranged for them so that they can discuss the different diseases occurring and plan how to make a joint effort to prevent and treat them. In small villages the community health worker should discuss the diseases she en- counters with her supervisor, who will guide her on the best ways of treatmen and prevention.

It is important for the community health worker to know the traditions and rituals linked with certain diseases. While discussing these diseases with community members she should show that she knows the beliefs. Some rituals associated with certain diseases may be bad; for example, if a child is suffering from measles the parents may believe that performing a religious ceremony and starving the child will make him better. The community health worker should discourage such practices. She should try to persuade the parents to perform the ritual quickly and feed the child soon after. A com- munity health worker who understands both local beliefs and basic nutritional needs will be able to give the most acceptable dietary advice to the communit

TABLE 3. SUMMARY OF COMMON CHILDHOOD DISEASES

Infection	Symptoms*	Effects on nutrition	Treatment	Ways of prevention
DIARRHOEA	Frequent watery stools of different colour and smell. Dehydration. (Vomiting; fever)	Poor appetite. Food hurries through bowel. Poor absorption of food. Food may be withheld as "treatment". Malnutrition made worse by frequent episodes.	Oral rehydration. Continue breast-feeding. Give light food <u>during</u> diarrhoea. Give extra food <u>after</u> diarrhoea.	Breast-feeding. No bottle-feeding. Clean water and food. Hygiene, laterines, hand-washing.
MEASLES	Fever, red eyes, sore throat, sore mouth, runny nose. Rash and red blotches on face, neck and body. (Diarrhoea)	Poor appetite. Food may be withheld as "treatment". (Poor absorption if diarrhoea present)	Cool body by soothing with wet cloths. Aspirin. Food as soon as child can eat. Extra food after measles.	Vaccine given at between 9 and 12 months old. Good nutrition prevents measles being very severe.
MALARIA	Fever - often high, sweating and with feeling of chilliness. Signs of anaemia. General weakness. (Unconsciousness) (Diarrhoea)	Poor appetite. Fever uses up body stores. (Poor absorption if diarrhoea present)	Special antimalaria medicine from malaria worker or health centre. Iron tablets. Extra food.	Tablets to prevent malaria. Control mosquitos: anti-malaria spraying on house walls, treatment of stagnant waters, drainage of ponds and marshes.
TUBERCULOSIS	Weakness, tiredness. Fever. Coughing, spitting. (Headache; painful joints; unconsciousness)	Poor appetite. Fever uses up body stores. Long illness weakens.	Special medicine from health centre must continue for at least a year. Give extra food.	BCG vaccine given at birth or at 1 month and at 5 years old. Good nutrition strengthens body's defences against tuberculosis.

WHOOPING-COUGH	Severe attacks of cough with whooping noise may last some weeks. Child is breathless and bluish. Vomiting.	Loss of food from vomiting may continue a long time.	Give extra food after child has vomited food eaten earlier.	DPT vaccine given in three doses: at 3, 5 and 7 months old. "Booster" dose at 5 years.
WORMS IN THE BOWEL	Symptoms vary with different worms. Sometimes worms are seen in stools. Signs of anaemia. (Diarrhoea)	Poor digestion. Hookworms suck blood causing anaemia.	Special medicine from health centre. Iron tablets.	Hygiene, toilets, hand-washing. Clean water and food. Using footwear stops entry of certain worms through the skin of the feet.
POLIO-MYELITIS (infantile paralysis)	Fever. Headache. Pains in limbs and body. (Weakness of limbs or body)	Poor appetite. (Difficulty in swallowing)	Rest. Aspirin. Give food as soon and as much as child will eat.	Oral poliomyelitis vaccine in three doses: at 3, 5 and 7 months old. "Booster" dose at 5 years.
DIPHTHERIA	Fever. Sore throat with greyish-white patches. Sore neck. Difficulty in breathing.	Poor appetite. Sore throat makes swallowing difficult.	Give food as soon and as much as child will eat. Aspirin. Take child to health centre if there is difficulty in breathing.	DPT vaccine given in three doses: at 3, 5 and 7 months. "Booster" dose at 5 years.
TETANUS	Newborn baby: unable to breast-feed and spasms. Older children: spasms, stiffness, tightly closed jaws.	Cannot eat because of stiffness and spasms.	Send to health centre or hospital for special treatment.	Immunization of mother during pregnancy: 2 doses one month apart. DPT vaccine given to child in three doses: at 3, 5 and 7 months.

* The symptoms in brackets may not always be present.

THE COMMUNITY HEALTH WORKER SHOULD KEEP A RECORD OF ALL ILLNESSES SHE ENCOUNTERS AND CAN IDENTIFY. SHE SHOULD DISCUSS THE TREATMENT OF ALL SERIOUS ILLNESSES WITH HER SUPERVISOR.

2.4 Treatment of infectious diseases and dietary management

Treatment for nine communicable diseases has been summarized in Table 4. For some diseases there is both a specific treatment and a general treatment. Specific treatment is giving special medicines that kill particular infecting germs or parasites. Tuberculosis and malaria are examples of diseases that require specific treatment. Tuberculosis treatment must continue for a full year, while malaria treatment may start to be effective within a few hours. Both diseases also need general treatment. In malaria, extra iron is a valuable general treatment.

PROPER DIET IS THE
BEST GENERAL MEASURE
IN ALL INFECTIOUS DISEASES

Measles is a disease for which there is no specific treatment and the most important part of the general treatment is a nutritious diet. It may not be easy to feed the child at first, because the child may have a sore mouth and no appetite. The parents and other relatives taking care of the child will also need to be gently persuaded to help feed the child. Soft foods of the sort that the child likes should be tried first. As a rule little food should be given often. Firm persuasion and much patience may be needed to feed the child. However, this is very worthwhile, because correct feeding is the best way to help him overcome the disease.

Give plenty to drink. Apart from food, an adequate fluid intake is important. This is particularly necessary for a child with fever who sweats a lot. The importance of fluids in diarrhoea has been described in Module 7. Other general treatments attempt to relieve discomfort and bring down fever. Half a tablet of aspirin or paracetamol given with food and fluid four times a day is helpful in bringing down fever in small children. If the child has a very high fever, wiping him with a wet cloth and fanning him will help in bringing down the temperature. These general treatments can be used for most diseases in which the patient has fever.

The treatment of any infection is not complete until the patient begins to eat normally. The best measure of nutrition during and after an illness is the weight of the child. Nutritional improvement is shown in two ways:

- the child's weight should be more than it was before illness, and
- the growth curve on the chart should be going upwards.

Until there are these signs of nutritional recovery, the child should receive extra food. This food can be an extra meal each day or an extra helping at each meal. This is an essential part of the treatment. Proper feeding is as important as giving any medicine, and it is more important than giving any health tonic.

2.5 Prevention of infectious diseases

Most common and serious infectious diseases can be prevented. There are two main ways of doing so:

- By decreasing the chances of individuals or the community coming into contact with the germs or parasites.
- By improving the defences of individuals so that, if they are infected, the germs cannot cause disease.

The first method is really improving the environment, or the area in which people live. For example, if everyone uses latrines, has plenty of water to wash with, and throws rubbish away in a protected pit, the environment will be clean; then there will be little chance of getting germs from someone with diarrhoea, for instance. To take another example, malaria is passed from person to person by mosquitos: when a mosquito bites a person wh has malaria and then bites another person without malaria, the parasites are passed from the malaria patient to the healthy person. But there will be few mosquitos in the community if they can be prevented from breeding in the pond reservoirs, and other stagnant water. This means clearing the environment of harmful mosquitos.

GOOD NUTRITION
MEANS
GOOD DEFENCE AGAINST
INFECTIONS

The defences of an individual against infections can be improved in a general way or in specific ways. A better state of nutrition means that a child's defences can function fully against any infections. This is a genera improvement. An improvement of the defences against specific infections can be achieved by immunization. It was explained in section 2.1 how a child who has measles once becomes protected against the disease by a special substance that his body makes. This is called *"natural immunization"*. It is also possible to produce *"artificial immunization"*. This is done by injecting "weakened" germs into the body. These germs attack the body but are not strong enough to produce the signs of the disease. However, they do cause the body to produce the special substance that kills the disease germs and thus protects the body from future attacks. A substance which can produce specific artificial immunization is called a *"vaccine"*. There are a number of valuable vaccines which can immunize and protect against infections.

BREAST MILK
INCREASES BODY'S DEFENCE
AGAINST INFECTIONS

When a mother breast-feeds her newborn baby she improves his body's defences both in a general way and in specific ways. By putting the baby to her breast soon after birth, the mother makes sure that the first germs he will get will be from her skin. At the same time she gives him milk that contains special substances that kill the germs the baby gets from her skin. The baby is thus immunized against these germs.

BREAST-FEEDING IS A REMARKABLE COMBINATION
OF NUTRITION AND APPROPRIATE IMMUNIZATION

2.6 Immunization programmes

2.6.1 Use of vaccines

There are a number of vaccines which can give immunity against diseases. These are very valuable in protecting the child against dangerous diseases of young children. The vaccines are made and given in different ways and have to be given at about the right age for the best effect. They also need to be given at certain time intervals.

SIX IMPORTANT VACCINES FOR CHILDREN

There are six important and common diseases for which there are vaccines. These diseases are: *measles*, *tuberculosis*, *whooping-cough* (pertussis), *diphtheria*, *tetanus* and *poliomyelitis* (infantile paralysis). The vaccines are given in a particular order, at specific ages and with appropriate intervals of time. The vaccine schedule may differ slightly from one country to another. Not all countries are able to offer every vaccination in their programmes yet. One good and recommended immunization programme is shown in Table 4.

The vaccine against tuberculosis is called BCG vaccine. It has to be given as an injection into the skin. It should be given soon after birth (in the first month of life). After 3-4 weeks, a small lump forms at the place of the injection. This may burst and fluid may leak from this for a few weeks. This is quite normal, and there is no need to worry. The injection should be repeated at about 5 years of age.

TABLE 4. AN EXAMPLE OF AN IMMUNIZATION PROGRAMME FOR CHILDREN*

The first immunization a newborn child receives comes from his mother's milk. At the very first breast-feeding, her colostrum (see Module 2) and breast milk will start to protect him from many diseases, including diarrhoea and colds.

The vaccinations given later are:

AGE	VACCINES	DISEASES PREVENTED	WAYS OF PREVENTION
Birth or 1 month	BCG (first)	Tuberculosis	Injection into the skin
3 months	DPT (first) Oral poliomyelitis (first)	Diphtheria, whooping-cough, and tetanus Poliomyelitis	Injection under the skin Drops by mouth
5 months	DPT (second) Oral poliomyelitis (second)	Diphtheria, whooping-cough, and tetanus Poliomyelitis	Injection under the skin Drops by mouth
7 months	DPT (third) Oral poliomyelitis (third)	Diphtheria, whooping-cough, and tetanus Poliomyelitis	Injection under the skin Drops by mouth
9 months	Measles	Measles	Injection under the skin (do not give before 9 months of age).
4-5 years (before starting school)	DT ("booster") Oral poliomyelitis ("booster") BCG ("booster")	Diphtheria and tetanus Poliomyelitis Tuberculosis	Injection under the skin Drops by mouth Injection into the skin

* Each country will have its own national immunization schedule

The vaccines against diphtheria, whooping-cough, and tetanus are mixed into one vaccine called DPT vaccine. They are given as an injection under the skin on 3 occasions during the first year of life - at about 3, 5, and 7 months of age. After this injection some children may have a red sore arm and fever for about a day. It is good to warn the parents that the child may have fever and a sore arm. They can be reassured that this is an expected reaction, and is much less serious than the diseases. It may be good to advise the parents to give to the baby half a tablet of aspirin or paracetamol in some milk, if he develops fever. Oral poliomyelitis vaccine can also be given at the same time as the DPT vaccine is given (i.e., at 3, 5, and 7 months of age). Usually a few drops of this vaccine are put on the back of the tongue or on a lump of sugar. There are no bad side-effects from this vaccine.

Measles vaccine is given as an injection under the skin at about 9-12 months of age. It does not work well if given before 9 months of age. If it is not given by about 12 months, the child may have measles before being vaccinated. Occasionally there is a slight fever about 7 days after the vaccination. This usually disappears in a day or two. The measles vaccine completes the primary course of vaccinations. If a child has missed a dose of one of the vaccinations at the proper time he should have it as soon as possible afterwards and continue with the immunization programme. The dates when the various vaccinations have been given should be recorded in the place provided on each child's growth chart.

It is considered appropriate to give "booster" (reinforcing) doses of some vaccines at 4-5 years of age, before the child starts to go to school. This strengthens the child's specific defences or immunity. The vaccines to be used at that time are BCG, oral poliomyelitis, and DT (diphtheria and tetanus, without whooping-cough vaccine).

2.6.2 Storage of vaccines

Vaccines are very fragile products and are spoilt if exposed to high temperatures or direct sunlight. It is very important to keep all vaccines in the refrigerator at a temperature between 4°C and 8°C (39°F and 46°F). Vaccines should never be exposed to direct sunlight. They must be stored with care.

Measles, BCG, and poliomyelitis vaccines are the most sensitive and should be kept frozen if possible. DPT vaccine should not be frozen. Because the vaccines have to be kept cool, and because they are quite expensive, immunization programmes have to be planned carefully. Children have to be collected together at a place which is convenient for the people. The place should not be far from a refrigerator or a good road so the vaccines can be kept cool or brought quickly.

2.6.3 The importance of the community health worker in the immunization programme

The community health worker has great responsibility in an immunization programme. Its success depends very much on her. She is the person who has to persuade the people that immunizations are worth while.

First, she has to explain the importance of the programme to the community and convince the leaders in particular. With their help, she must find all the children of the right age for vaccination and convince the parents of the need to have their children vaccinated. The willing participation of the parents and leaders is important, because the community health worker will need help to get the children to the vaccination centre at the right time on the right day, and to bring them back again for their second and third vaccinations at 2-month intervals.

Immunization programmes benefit the community in two ways. First, immunizations prevent not only infection but also malnutrition. Secondly, the programme gives an opportunity to the community to participate collectively in its own health care.

1. Start the vaccinations early in the first year.
2. Try and complete the series of injections.
3. Make sure the malnourished children are vaccinated, they are a priority group.

3. EXERCISES

EXERCISE 3.1 A quick study of the infectious diseases in a community

The trainees can divide up a village or community into streets or areas. Each trainee visits all the houses in one street or area. In each home she should quickly enquire about the infectious diseases there have been in the last month. She should ask especially about diarrhoea, measles, whooping-cough, fever (malaria), and tuberculosis.

The collected information is put together by adding up all cases of different infectious diseases. This information should then be discussed by the trainees. Some important points they should consider are: Is this information accurate and complete? If not, why not? In what ways will this information help with the work of a community health worker? Is it necessary to learn more about the treatment and prevention of particular diseases that are important in the community?

A quick survey of this sort will indicate the problems in the community. Some people may be offended by questions about the health of their family, or they may not want to tell about some diseases. Some communities will be very sensitive about such questions; therefore, this exercise needs to be planned carefully before it is started. It will be helpful for trainers themselves to act in role-plays about how to approach the community in the survey.

EXERCISE 3.2 Observing the community environment

The trainees should form small groups and make a tour of the area in which the community lives. They should observe as many things as possible that make the environment dirty and point out these things to each other. Afterwards the groups should come together and compare their observations. Finally, the trainees should discuss what can be done to make the community environment cleaner for better health.

EXERCISE 3.3 Role-plays for trainees

(1) Home interview.

A mother is anxious to have her child immunized against measles, but the mother-in-law objects to injections, which she thinks are unnecessary, and insists on the need for children to have the disease and overcome measles. The community health worker points out the benefits of vaccinations.

(2) Public meeting to promote the immunization programme.

During the meeting there is a disagreement between the community health worker and a member of the audience, who says that the fever after vaccination is more dangerous than whooping-cough itself.

(3) Home interview: discussion between a community health worker and family.

The grandfather insists that using the open ground as a toilet is more healthy than a smelly latrine. The community health worker has to persuade him that a well-made and properly used latrine is healthier.

MODULE 9

NUTRITION AND THE COMMUNITY: GETTING STARTED

1. LEARNING OBJECTIVES

After studying this chapter, taking part in the discussions, and doing the exercises and activities, a community health worker should be able to:

o Develop a good relationship with individuals, families, and groups in the commuity.

o Identify people, either individuals or groups, who can help to improve the nutrition of others in the community.

o Identify people, both individuals and groups, who need special help with their nutrition.

o Increase the desire of individuals and groups to improve their own nutrition and health and that of the community.

o Pass on health and nutrition messages simply and convincingly.

o Help to organize and take part in meetings to consider important aspects of nutrition.

2. TRAINING CONTENT

The success of a nutrition and health programme depends on doing the right things, and doing them together with the local people.

It is important to win the confidence and cooperation of the people. People will only be convinced that a programme is worth while when they see that community health workers are doing good and sincere work. It is important for the people to see that community health workers are responding to their problems and needs and involving them in planning and doing something to solve these. The community health workers should not impose plans because they alone think something should be done. It is also important that the people should see improvements in the health of the community, especially of their children. When a community health worker has become a friend and a helper, people will believe in what she says and slowly change their ways and improve their feeding practices.

2.1 How to develop a good working realtionship with individuals, families, and groups in the community

How do you work happily and effectively with people? It is important to get to know people, make friends with them, and exchange ideas. This is easy for some persons but more difficult for others. It is important for everybody to improve working relationships in order to do a job most effectively. A community health worker should take every opportunity to contact other people, particularly when she is just starting her work. Contacts can be informal, as for example, when meeting someone in the street. It can be more formal, as when visiting a home or attending a meeting or social function. Every contact is an opportunity to develop a good relationship. Working together for better nutrition is more effective if the community health worker has good relations with the members of the community.

MALNUTRITION IS A COMMUNITY PROBLEM
AND NEEDS A COMMUNITY ANSWER.

THE HOME VISIT IS THE MOST
EFFECTIVE WAY TO
ESTABLISH GOOD RELATIONS
WITH PEOPLE

The home visit is an essential part of the work of a community health worker. From time to time she should visit every home for which she is responsible. The first visit is particularly important. The visit should be made at the most convenient time for the mother or senior women in the family. Avoid visiting a woman when she is busy cooking the main meal, or attending to her husband or children. Respect all local social customs. For example, the correct greetings, particularly to the senior members of the family, are essential. Every effort should be made to be courteous and friendly. A community health worker may have been appointed and instructed to visit families, but when she enters a home she is a visitor. Even if it is a poor and simple house, she should show every courtesy. She should introduce herself in the local manner. She should then explain that she has been appointed to help families in the community. She should state in simple language how she hopes to be able to help. She should not force herself upon a family or make promises she will not be able to keep. Her relationship with the family will be strengthened if she can compliment the housewife about some aspect of her home, or if she shares some common interest with a member of the house. Making friends with the children is a good way to strengthen her relationship with a family. Sensitive or personal issues, like family planning or money matters, should not be discussed at a first visit.

PEOPLE DO NOT LIKE TO BE STUDIED.
THE APPROACH MUST BE VERY CAREFULLY EXPLAINED.

2.2 Identify people who can help to improve nutrition and health in the community

A community health worker cannot improve the nutrition of a community by herself. She needs all the help she can get. There are persons and groups in every society who are helpful. Module 1, "Getting to know the community", considered how to approach the official and informal leaders. Even if a community health worker comes from the community she serves, she needs to get to know the people better. She must look carefully at the society in which she works, considering who can help.

Families who are poor, but whose children are healthy and well-nourished are of special interest. What are the reasons for the good nutrition in these homes, despite the poor circumstances? Observe these families and the activities of the mothers because they have found out how to be healthy. These nutritionally successful families are a resource from which to learn to help others.

In addition to the government organizations working in the community, other organizations also have much to offer. Religious groups are often influential and helpful. Priests and religious leaders should be informed and involved in the nutrition work. Voluntary agencies and women's groups are often active and eager to help.

2.3 Identifying people who need special help

Malnutrition affects certain individuals or groups more than others. Those who are at the greatest risk of malnutrition have been considered in different modules, but especially in Modules 1 and 6. A community health worker should always be careful to identify all the persons at risk in the community, and she should concentrate on the individuals and groups with the highest risk.

2.4 Increasing the desire of individuals and groups to improve nutrition

Motivation is the inner force or desire to do something. Motivation for good nutrition is not very great in many families or communities. Therefore, it is important to show the people how good nutrition is related to other things that people want and will work for. First, the community health workers themselves must have a strong motivation to improve nutrition. This can be achieved by having an effective and interesting training programme for them. Studying the modules, and particularly doing the exercises together, will show them the importance of good nutrition. They will be encouraged when they see the results of their work: improved growth and children recovering from malnutrition. Once community health workers are convinced of the importance of good nutrition, they will be able to influence individuals and groups in the community.

Favourable acceptance of ideas about better nutrition depends on explaining how good nutrition is linked to other things people want. In agricultural communities people want bigger and better harvests. Everyone also wants healthy children. Health and strength depend on good nutrition and are necessary for hard work. Hard work is essential for a better harvest. This relationship should be explained and can be easily understood.

People fear ill health, especially serious disability or deformity. Blindness due to vitamin A deficiency and paralysis and deformity due to poliomyelitis are examples which people can understand; a programme which decreases these serious results of malnutrition and disease will interest people.

Demonstrations of the serious results of poor nutrition and the good results of better feeding can be convincing. A child who will be blind all his life because of vitamin A deficiency will make people think seriously about the advice about correct feeding to prevent such a disaster. It is important to be kind and sympathetic when showing such a child and talking about the problem. The family or the child should not be offended or hurt in any way. A child who has recovered from malnutrition as a result of a good diet of local foods can be a very convincing example, especially if the child's mother explains how the improvement was achieved. "Before and after" pictures of local children who have recovered are a permanent record of such a success. Growth-charts can demonstrate the effects of diseases and a good diet. The weight loss due to an infection such as measles and the weight gained to return to normal after extra feeding can be shown and understood. In some countries and situations a "community kitchen" may be useful. The participation of local women, particularly those who are leaders, is a most important

factor. Such a kitchen can be used to provide additional meals for especially needy groups. It can also be a place where mothers can see and help to prepare new snacks, mixtures, and dishes from the foods which are normally available in the community.

2.5 How to pass on nutrition messages convincingly

A community health worker should be a good teacher. The best teaching is done informally, for instance, when visiting a home, when asked a question by someone, when meeting a mother at the market, or during a social function. Sometimes a small group of interested friends or neighbours will gather when she is explaining something.

To teach effectively a community health worker must know the important messages, and how to pass them on to others. Important messages on various topics are given in the earlier modules.

HERE ARE SOME TIPS
ABOUT TEACHING

Catch the attention and interest of the mothers. If a woman has asked a question about her child, you have a good opportunity because she will be interested in your reply. Look for something about which you can compliment her. For instance, is her home tidy, is her child washed and clean, and is she breast-feeding her child? It may also be worthwhile to see if the growth chart of her child shows regular weighing and completed immunizations. The mother gets the feeling that personal interest is being taken in her child and family and she will listen carefully to what you have to say.

The message should apply to the mother's situation and to her hopes and desires. If her child has fever, the first message should be about how to reduce the temperature. Only afterwards will she listen to what you say about feeding children who are ill. Motivation and acceptability of a message depend on the immediate needs and desires of a mother.

The message should be simple. Try to put across only one or two ideas at a time. The ideas should be closely connected to something a mother already knows.

The message should be heard, seen, and understood. Speak clearly and use simple words. Whenever possible, use pictures etc. to show what you are talking about. This is important with different types of foods. Mothers will understand the messages more easily if simple examples are given.

Participation. It is easy to forget what has been said or seen, but doing something helps to remember it. What is even better is to show someone else how to do something. If a child is not growing well and a mother is told to give him extra food each day, she may not remember it. If the community health worker encourages her and helps her to get started, the mother may give

the child the extra meals regularly. As the child's growth improves the mother will feel proud and happy at what she has achieved. She will remember the importance of more meals for small children. If the child was simply sent off somewhere for an extra meal twice a day promoted by a feeding programme, the mother will never really know about the importance of extra meals

A local proverb or a joke can make it easy to remember a message. "A small seed, if properly nourished, grows into a mighty tree". It is obviousl necessary to use a proverb correctly. It is important not to offend people. Understanding and judgement are necessary when making jokes in another language or in a culture different from one's own.

Repetition reinforces a message. After telling a mother something, it is useful to ask her to repeat the message and explain it in her own words. This will help her to remember it. The test of her understanding will be to see if she carries out the instructions in her own home.

A friendly and respectful relationship is a great help when teaching or learning. A welcoming smile and a helpful deed are a good beginning for exchanging information. An arrogant attitude will create barriers to learning.

2.6 Organizing and taking part in meetings to consider nutrition matters

Every culture has some form of gathering where people discuss matters of common interest. Sometimes all important decisions are made at such meetings. There may be different meetings for different groups, for example, young farmers, mothers, community leaders, and so on. Various aspects of nutrition could be discussed at these meetings. If there is no suitable group or meeting to discuss nutrition and health, the community health worker may have to start one.

DISCUSS NUTRITION PROBLEMS
IN COMMUNITY GATHERINGS

Every meeting should have a definite objective, and for each objective a list of topics should be prepared. Both the objective and topics should be known to the people attending the meeting. The community health worker should prepare teaching methods and aids suited to the topics that will be discussed at the meeting, because it provides an important learning opportunity. She should collect together materials which can illustrate the topics being considered: for instance local foods, weighing scales, and growth-charts.

She should make sure that the leaders of the community are invited. This means not only the official leaders, but also those who are looked upon for guidance by others in the area. If possible, she should have the meeting led by someone who will understand the social, economic and health issues associated with nutrition problems, someone who is respected by others and not afraid of change.

The meetings should follow the local pattern, but an effort should be made to keep them informal. The community health worker should be prepared to take an active part. She can ask questions and make comments that will keep the meeting going in the right direction. The purpose of such a meeting is to keep nutrition and health issues in people's minds. It is an opportunity to inform them about factors that affect health. The most important purpose, however, is to stimulate the people in the community to be active and to do something about their nutrition problems. Here you may use the approaches suggested in section 2.4. What is needed is personal and community commitment to make changes that will improve the nutrition and health of the high-risk groups. This is not an easy task, and very quick results should not be expected. Patience and persistence will be necessary.

3. EXERCISES

EXERCISE 3.1 Examples from the community

After an observation of the community like that undertaken in Module 6, the trainees each describe how any of the following children or families could serve as examples for teaching about nutrition. For example:

- A child who is blind or has eye damage due to vitamin A deficiency.
- A child who has become malnourished after measles.
- A family with well-nourished children even though they are poor.

EXERCISE 3.2 Demonstration on safer and better ways of preparing and preserving foods

Get help from as many organizations and individuals as possible to arrange a demonstration. There should be posters and exhibits. The demonstration should include protecting food from insects and rodents and preventing food from going bad after it has been cooked. Organize the demonstration on some suitable public occasion. Ask an influential person to open the exhibition.

EXERCISE 3.3 Problem-solving discussions

The trainees can be divided into groups of 4 to 10. Each group is asked to discuss a problem for 15 minutes. Groups can discuss the same or different problems. One person from each group must then present the suggestions about how to solve the problem to all the groups. Some suggested problems are given below. Other problems which have come up during the training or service can be discussed in the same way.

- The village chief or headman expects the community health worker to visit his house every day to care for his old mother. The community health worker knows this old lady does not belong to the high-risk priority group. What should she do?
- A local traditional healer believes that all children with diarrhoea should be starved for 4 days after the child has recovered. What can the community health worker tell the child's parents, who have some faith in the healer? How will she go about changing the belief of the healer?
- A supervisor is very critical of the work of a community health worker, but does not visit the field area to find out what the situation really is. What should the community health worker do?

EXERCISE 3.4 Teaching practice

The trainees should be asked to prepare a 5-minute nutrition lesson for a small group of village mothers. Each trainee speaks to the other trainees as if they are the group of mothers. After the session the trainees discuss the good and poor points about the teaching and how it could have been improved. The trainees should be encouraged to use teaching aids. It is important that there be some praise along with criticism. It is necessary to keep practising teaching and preparing nutrition lessons in new ways even after the initial training period is over.

EXERCISE 3.5 Role-plays

The trainees should perform role-plays about the personal relationship in various aspects of their work. Some examples are given below.

- A home visit. In this play the participants are: a community health worker anxious to help a new family; a mother who would like to learn some new ways of caring for her children from the community health worker; a grandmother who believes she already knows everything about looking after children; and a neighbour who thinks modern care only involves more injections.

- A nutrition advisory committee meeting. Participants in this play are: a chairman, sympathetic but easily distracted; a sceptical member who believes that anything associated with the government in any way will not work; a helpful member who keeps interrupting with useful ideas which are not connected with the subject; a community health worker, trying to keep the committee on the subject of how to store enough food grain to help the weaker sections of the community through the next "hungry season".

- Two contrasting nutrition lessons. In this play the trainees compare a good and a bad nutrition lesson. In the bad one, the community health worker does not concentrate on advice about nutrition, brings up too many different ideas, uses many long words, and does not speak clearly. The second lesson is good. The community health worker concentrates on a definite message, speaks clearly, illustrates her talk well, and wins the active participation of the audience.

EXERCISE 3.6 Preparing a plan of action upon completion of training

When they have finished their training, each community health worker should prepare an outline of what she plans to do during the first 3 months of her new work in the community. She should indicate:

- specific objectives;

- specific activities to be undertaken (with a brief description of the steps to be taken for each activity);

- target dates for each activity;
- people who will be involved in the activities;
- resources needed; and
- when supervision will be conducted.

ANNEX

TRAINING HINTS

I. PLANNING THE TRAINING

A. The trainees

In order to plan the training successfully, you need certain information about the trainees. This information includes:

Their level of education and their abilities. This will affect the complexity of the course, its length, and the teaching methods, aids and language to be used in the training.

Previous knowledge of subject. If the trainees have some previous knowledge of the subject matter and some experience in the skills involved, your work will be easier. Try to determine by pre-testing how much they already know and build on this useful foundation.

Social and cultural background. This gives clues to certain characteristics of the trainees. Are there any typical likes and dislikes (prejudices and biases) related to any group? How will this affect the training?

Motivation and interest. It is useful to find out how and why the trainees were selected? What motivated them to join the training? What do they know about the programme and about what is expected of them?

B. Organizing the lesson

It is essential that the learning objectives are stated in terms of what the trainees will be able to do at the end of the training. These objectives should be known not only to the trainers but also to the trainees. The entire training must be based on the final objectives of the course.

When the objectives have been clearly defined, the lessons can be developed. Each lesson can be divided into three parts:

1. A brief introduction serves to motivate the trainees to learn about the subject matter and starts them thinking about it. A number of different approaches can be taken to arouse their interest - asking questions, presenting a case-study, showing pictures, etc. The introduction may also be used to review a previous lesson and link it up with the present one.

2. The main part of the lesson is concerned with learning the actual subject matter, which is presented in short steps. The methods of presentation, the exercises and teaching aids, and the time needed must be carefully organized. Allow plenty of time for questions and their answers. Regardless of how much the lesson is planned, the trainer must always be prepared to depart from the plan a little if necessary.

3. In the conclusion - the last 5 or 10 minutes of the lesson - the trainer links together and summarizes the main points of the lesson.

1. State the learning objectives so that everyone knows them.
2. Teach in logical order ...
3. ... but remember what motivates your students.
4. Challenge your students, but help them to succeed.
5. Teach in short steps: obtain feedback.
6. Use appropriate teaching aids and situations.

C. Using teaching aids

The more common types of teaching aids are described in Part II of this Annex. Some of the reasons for using them are:

- To illustrate the points being discussed - for instance, in addition to a description of the symptoms of kwashiorkor, a picture of a child with kwashiorkor will help the trainees to learn more easily and remember better.
- To simplify teaching, especially of difficult concepts - for instance, training in how to weigh a child and record the weight on a growth-chart will be simplified by having a weighing scale and a chart for demonstration.
- To make lessons more interesting and to provide variety.
- To provide opportunities for the trainees to practise - for instance, to gain skill in weighing and recording needs practice using the scale and chart;
- To provide a good way of putting together and summarizing the main points of a lesson.
- To provide the trainees with reference material to which they can turn later - handouts and certain visual aids that the trainees can keep are particularly useful for this purpose.

D. Evaluating or testing the progress of trainees

It is important to check whether the trainees are learning what they should learn. By an evaluation of their work they can be shown how much progress they are making. This can encourage them to work harder. Tests can also direct the learning of trainees. This is especially true when the test questions emphasize the stated objectives of the training.

Evaluation also tells the trainer how well she has taught. Which trainees did well and which ones did poorly and need more help? How well is the whole class performing? She should use the information provided by the evaluation to improve the teaching.

There are different methods of conducting evaluation. The choice of method will depend on the situation and characteristics of the trainees.

1. Informal testing can be done inside the class or outside.

In class, you may put questions to the class as a whole. You can assess the difficulties of the class or of individuals with the subject matter. Outside the class, the questions will usually be put to individual trainees or small groups of them. Some points to bear in mind are:

- The questions should be related to the objectives.
- The questions should be clear and precise.
- The questions should require fairly short answers.
- Give everyone an equal chance to answer questions.
- Encourage the students and do not ask any question in a way that might embarrass a student.

After class, the trainer should also ask herself certain questions to check her own performance:

- Were the learning objectives clearly specified and defined?
- Did all the trainees know what the objectives were and understand them?
- Were the content of the lesson and the teaching methods and aids right for the learning objectives?
- Were the teaching aids properly prepared for the lesson?
- Was there a proper check of how the trainees are progressing?
- Did the introduction to the lesson link it clearly with the previous lesson?
- Did the trainer establish a positive relation with the trainees throughout the lesson (by looking directly at them instead of at the chalkboard or ceiling; by arousing their interest, etc.) or did the attention of the trainees wander?
- Were the right examples used to clarify important points?
- Was there enough time for questions?

- Was the material presented clearly and could the trainer always be heard?
- Was there a good summary of the conclusion of the lesson?

2. Formal testing or examination may be done in various ways?

- Practical tests. The trainee demonstrates her ability to perform certain practical tasks. These must be relevant to the learning objectives. There should be enough time to complete the test. The trainees should have been shown how to do the task and should have practised it before being tested. As an example of a practical test, trainees may be asked to demonstrate how to weigh a child accurately and how to record the result on a growth-chart.
- Oral tests. The trainee's knowledge of a subject is probed deeply by verbal questions and answers. The ability of the trainee to give satisfactory answers may be affected by her communication skills, her self-confidence, and the encouragement given by the trainer or the person conducting the testing. If a grade is given, it may be affected by the personal feelings of the tester.
- Written tests. The trainee's knowledge is tested by writing answers to questions. When writing test questions, always think how relevant they are to the learning objectives and to the trainees. There are two types of written tests:

(a) Written tests with long answers or essays. These are often used in academic situations and may not be advisable for community health workers. They are useful for judging the depth of knowledge of trainees and how they express themselves. It is often difficult to grade the results with fairness.

(b) Written tests with short answers. These may require one-word answers, completing a sentence, stating whether a given answer is true or false, or choosing the correct answers among several that are given. For each question, there is a precise answer. It takes time to prepare the questions, but the correction and marking of the tests is very easy and quick.

II. TEACHING AIDS

A. Selecting teaching aids

The proper use of teaching aids requires much careful thought. This is particularly true if they have to be prepared from scratch. The trainer should always make quite sure that the subject matter, the training methods and the visual aids are all suited to each other. The trainer should also have adequate rehearsal in their use, especially if they are being used for the first time, to ensure that she is quite familiar with them. Some factors to consider in choosing the aids are:

Situation. To whom will the presentation be made - one trainee or a group of trainees? Where will the presentation take place - clinic, classroom or field? This will affect the size of the aids. How often will the aids be used? If they are to be used once only, it may not be worth while to prepare expensive and elaborate aids. Will the use of the aids depend on such things as electricity, transport or other equipment like projectors; if so, are these available?

Subject matter and desired effect. What emotion is the trainer trying to arouse - fear, surprise, shock? A much stronger impact can be made when teaching the symptoms and effects of kwashiorkor or marasmus by showing real severe cases or coloured pictures than by using sketches. Does the information require gradual building-up and linking with other information? It is better to use a flannel-board than a chalkboard when teaching the use of growth-chart and how to interpret the information on it.

Cost. Teaching aids cost money, and some are very expensive. Film and slide projectors and overhead projectors are the most expensive, followed by the magnetic board and the flannel board. Chalkboards are cheap and are practical in many situations.

A number of common teaching aids, their advantages and disadvantages and some useful tips on their preparation and use are listed in Annex Table 1.

B. Designing visual aids

Visual aids are intended to improve the transfer of knowledge and skills by showing what has to be learnt or done. They must be very carefully chosen to suit the subject exactly. If new ones have to be designed, the following points should be borne in mind:

- Use pictures whenever possible.
- When words and numerals must also be used, use as few as possible.

- Use graphs to present statistics and numerical information such as the results of weight surveys.

- Use colours as often as possible. The use of colours can increase the effectiveness of a picture and emphasize key points. They can be used for coding, contrast, and improving visibility. Colour combinations or contrasts are important. The colours that attract attention best are red and blue. Good combinations of colours are black on white, white on black, dark blue on white, brown on white, and green on white.

- Make the visual display simple. Use only key words and phrases, simple shapes and lines, and a few well-chosen colours. Do not crowd the display.

- Make the visual display bold and large enough to be easily seen and read. This is done by using the proper colours and letter styles and sizes and by careful attention to the spacing and layout.

- Make the visual display clear and easy to understand; it should convey only the information being presented. Ensure that the main points are emphasized.

- For lettering, use special pens for the desired size, colour and boldness. You may use commercial pre-cut letters, lettering guides (stencils) and stick-on letters, or you may write free-hand. Be sure the letters are large enough and not overcrowded so that the farthest person in the audience can read them. Plan the lettering ahead, using light pencil or white chalk.

- If a complex figure is necessary, the different elements should be brought in one by one. Build up the picture step by step and it will be more easily understood and accepted. Flannel boards and overhead projectors are very good for this purpose; for instance, a flannel-board can be used to teach the use of a growth-chart. One item can be added at a time.

III. TEACHING METHODS

There are many methods of teaching. Five of them are summarized in Annex Table 2. Each one has to be studied to determine its suitability for certain tasks. To be skilful in their use needs constant practice.

The choice of teaching method will affect whether the desired learning will take place, the learning situation, and how actively the trainees take a part in their own training.

In this book, exercises have been used instead of formal tests. This has been done for two reasons: to provide trainees with practice and to find out how much they have learned from their training.

The main factors to be considered in choosing teaching methods are:

- The trainer's knowledge and experience in teaching, familiarity with the methods, and ability to communicate.

- The trainees' intellectual level, educational background, age and practical experience, and social and cultural environment.

- The objectives of the training. The changes to be brought about through training are defined in terms of knowledge, attitudes and skills. Depending on the objectives, one method or a combination of methods may be used. For instance, if trainees are to acquire skills in identifying problems and in decision-making, it is better to give a brief talk, and have them work on a case-study or role-play than to give them lectures. Role-playing is also useful to improve communication skills and behaviour.

- The subject matter. Different subjects lend themselves to different teaching methods. Food preparation can best be taught by actually preparing the food in a group. The self-confidence that trainees need in order to teach mothers can be built up by role-playing. Comparing the cost of breast-feeding and bottle-feeding can best be done in an actual exercise.

- Time and other resources. The costs involved, the amount of time available, the time of the day when training is given, and the availability of facilities and equipment are important.

IV. HOW TO COLLECT INFORMATION ON THE COMMUNITY

The need to conduct a survey to collect information on nutrition, health and related factors in a community was discussed in Module 1. Surveys need time, money, manpower, materials and transport. How much of each is needed depends on the amount and type of information to be collected. This in turn depends on the use to which the collected information will be put. Here are some points to remember when planning a survey:

1. Be specific on the purpose of the survey. Exactly why is the information needed?
2. Collect only the information necessary for the purpose.
3. Prepare simple means or "instruments" for collecting information. An example of an instrument is a questionnaire or an observation form.
4. Ask the permission of the community leaders before starting the survey.
5. Give an equal chance to each house or respondent to be visited for information.

Several methods of collecting information may be used:

- Weight survey
- Arm circumference survey
- Records review
- Informal discussions or interview
- Observation
- Planned individual or group interview
- Questionnaire

The weight survey and arm circumference survey have been fully dealt with in the training modules. The main features of the other five methods are summarized in Annex Table 3.

ANNEX TABLE 1. SOME COMMON TEACHING AIDS

	Advantages	Disadvantages	Tips on preparation and use
1. Handout sheets and other printed matter.	1. Particularly useful to trainees because they serve as visual aids during the training. Can also serve as useful sources of reference later on.	1. May distract trainees who will read or work on handouts if they are distributed too early. 2. Not very useful for illiterate trainees unless carefully planned. 3. Reproduction depends on available facilities and time - e.g., stencil, offset, typing with carbon copies, photocopy machine.	1. Can be designed in different ways: - as visual illustration of trainer's presentation - as work-books with exercises - simply as printed information. 2. State the use of the handouts. 3. Plan carefully the spacing, illustrations, labelling, headings, paging, type and size of paper.
2. Chalkboard (blackboard)	1. Generally available and inexpensive. 2. Does not require advance preparation of visual aids. 3. Very useful in presentations which require much erasing - e.g., mathematical calculations. 4. Allows step-by-step build-up of presentation.	1. Trainer has to turn her back to the trainees. When writing, her attention is on the board, not on the trainees. 2. Trainer does not see audience reaction while writing. 3. Can usually be read or seen only at a limited distance. 4. Dusty and messy to hands and clothing. 5. Limited dramatic effect of the presentation.	1. Keep in mind the audience for whom you are writing. 2. Use print or block capitals for emphasis. 3. Write only the essentials; do not overcrowd; be tidy and neat. 4. Use coloured chalk for emphasis. 5. Carry your own chalk and eraser to ensure availability.
3. Charts and posters	1. Useful for displaying information on a permanent or temporary basis. 2. May be prepared cheaply by the trainer, especially if only one or a few copies are needed. May be produced in quantity by a printer. 3. Flipcharts are useful for presenting a number of points (or even story-telling) in short steps and certain order. 4. Presentation is not messy and saves time. 5. Materials are reusable for summary review and another presentation. 6. Portable.	1. Pages have limited spaces. 2. Could present problems in transportation and storage, depending on amount and bulk. 3. Limited dramatic effect of the presentation. 4. Should be big to be useful with a large group of trainees.	1. Do not overcrowd; use big, clear lettering. 2. If cost permits, use colour. 3. Uncover the charts or posters one by one to create suspense and concentrate attention. 4. Avoid crinkled and noisy sheets, which can be annoying. Stand to one side when presenting the chart. 5. Store carefully and preserve well for next use.
4. Flip-charts	1. Inexpensive and allows for writing space where chalkboard is not available. 2. Easy to carry. 3. Useful for recording ideas during group discussions.	1. Requires special felt pen for big writing. 2. Suitable only for small groups.	1. Bring extra paper and pens of different colours; also tape or thumb-tacks for posting paper on the wall.

	Advantages	Disadvantages	Tips on preparation and use
5. Flannelboard	1. Easy and inexpensive to construct. 2. Can be prepared in advance. 3. Reusable and permits quick changes. 4. Permits step-by-step build-up of complex figures. 5. Versatile: can use words, phrases, lines, drawings, photographs and other cutouts.	1. Visuals have to be prepared in advance.	1. The essential parts of any flannel-board are the flannel itself, from which the surface and the cut-outs to be placed on it on it are made, and a flat piece of wooden sacking to keep the flannel firm. The backs of the cut-outs are pasted with material to make them stick on the flannel. This may be sandpaper, blotting paper, foam-rubber or any other material that will adhere on the flannel. 2. Plan and rehearse in advance the exact appearance of the board at any one time during presentation. Mark the positions of cut-outs lightly. 3. Arrange the cut-outs in the order of presentation before you begin. 4. Store the board and cut-outs carefully to keep them clean and prevent the sides folding.
6. Overhead projector	1. Flexible materials can be prepared easily by different methods. It can be used in different ways - for writing and presentation of charts, etc. 2. Can be used without completely darkening the room. It is easy to manipulate. 3. Trainer faces audience all the time. She can work and write on it (horizontal surface) while sitting down. 4. Permits use of colour and other effects by presenting short steps in orderly sequence. 5. Transparencies are reusable.	1. The projector is expensive. 2. Requires electricity, special pen and acetate or plastic transparencies. 3. Heavy, although portable. 4. Spare parts may be difficult to obtain and expensive. 5. Light from the projector in the trainer's eyes may be unpleasant.	1. Produce transparencies by drawing or writing directly on to transparent acetate (plastic) sheets. Use suitable grease pencils or felt-tip pens. 2. Two techniques which may be used are: - "overlay" technique: transparencies can be laid one on top of the other to add labels, colour or other details. - "uncover" technique: start by covering the entire transparency with a sheet of paper and gradually uncover more parts as necessary. 3. Mount transparencies on cardboard with adhesive tape to preserve them for future use and for easier handling. Store carefully. 4. Arrange transparencies in exact order of presentation; rehearse their use.
7. Slides and filmstrips with appropriate projector	1. Easiest way of bringing real-life situations into the classroom; colourful and dramatic. 2. Less expensive and easier to operate than films. 3. They may be prepared for a complete lesson, accompanied by written notes or tape-recorded commentary. 4. Filmstrips cannot get out of order. 5. Both slides and filmstrips are compact and convenient.	1. Expensive. 2. Most projectors require electricity. 3. Even the portable models may present a problem in mobility. 4. Spare parts may be difficult to obtain and expensive. 5. Require darkened room for presentation.	1. Slides are easier to edit and arrange for training purposes than filmstrips. 2. Put slides in the right order before presentation. If filmstrip is used, check the direction of the filmstrip. In both cases, make sure you have the correct machine. Rehearse. 3. Before and after the showing, prepare good presentation guides - e.g., what to look for, discussion guidelines or leading questions. 4. Repeat the showing or parts of it for emphasis. 5. Switch off projector when not in use. 6. Make sure you have extra bulbs and long extension cord.

	Advantages	Disadvantages	Tips in the preparation and handling
8. Sound filmstrips or slide-tape presentations	1. The accompanying tape can present a dramatic account of the story behind the slides or filmstrip. This can be very dramatic, and effective for motivation and training, especially if professionally done.	1. Additional investment needed for equipment. 2. Need special expertise to prepare and training and practice to use.	1. The script or story (sound) and pictures should match well. 2. Many agencies have prepared good sound filmstrips on slide-tape presentations. It would be less expensive to purchase these than prepare from scratch. Always preview before buying to see if relevant to your need and situation.
9. Use of real examples (e.g., real food items or food models)	1. Convenient and bring real-life situations to class. 2. Very effective for clear teaching and learning.	1. May not be readily available or difficult to bring in.	1. Use real examples whenever possible.
10. Radio	1. Radio is probably the most widely available mass communication medium. It is very popular in rural areas. It is cheap, easy to operate, and portable. 2. It meets the need of institutions to reach scattered and distant segments of the population. 3. Broadcasts can be taped for replay.	1. Available broadcasts may not contain material that is useful to the trainer. 2. Influence on station programming is possible only through official channels. This requires considerable preparation. 3. Listener reaction to the programme is not known, except when the broadcast is being heard by trainer and trainees in a group. 4. Limited to audio only.	1. If broadcast of a certain programme is known in advance, group listening can be organized. About 20 members listen together and discuss what they heard, using guide questions. Feed-backs can be given to the broadcasting station. 2. To be successful, the radio programme must be phrased to be understandable to the community. It must be presented to interest the average reader.

ANNEX TABLE 2. COMMON TEACHING METHODS

Method	Description	Advantages/Uses	Disadvantages/Limitations	Example or Application
Lecture	1. Trainer does most of the talking, with very little participation from the trainees. 2. May be supported by the use of teaching aids.	1. Suitable for large audiences. 2. Trainer can plan exactly the presentation in advance. 3. Trainer can present large amount of information in short time.	1. Provides only limited level of stimulation. 2. May be difficult for trainees to take complete and accurate notes. 3. Very limited participation by trainees. 4. Difficult to distinguish between difference in learning style and background among trainees.	1. If lecture has to be used, try to limit it to not more than 20 minutes of talk. 2. Lecturer may ask questions during the talk to check trainees' understanding and to keep their attention. 3. Allow time for questions and answers afterwards.
Group discussion	1. Free exchange of knowledge, ideas and opinions among trainees and trainer. 2. Less formal than lectures and trainees usually do more talking than the trainer. 3. Can be used to examine issues in depth, explore alternative opinions and develop communication skills.	1. Active role of trainees enhances improvement of attitudes. 2. Suitable for changing attitudes and forming and applying opinions. 3. Good for finding out what knowledge trainees have learned.	1. Time-consuming. 2. Unequal participation by trainees unless properly guided. 3. May deviate from the subject matter.	
Role-playing	1. Trainees enact the role of a certain person in a particular situation. The whole situation is described and played as realistically as possible. 2. Used to practice real-life situations.	1. Suitable for near-to-life practice situations. 2. This practice can give confidence to trainees when faced with the real situation. 3. Trainees may become highly involved. 4. Trainees immediately find out how effective their performance has been. 5. Trainees can work independently once they know the rules and their roles. 6. Useful in strengthening the skills of human interaction, and in strengthening the skills of planning, decision-making, and thinking.	1. Criticism after the role-playing can embarrass trainees unless properly guided. 2. Roles may not be played seriously. 3. Requires plenty of time. 4. Preparation requires special skill and experience, and time.	1. Usually a trainee plays the role of a community health worker and what she will do in a given situation, e.g., what advice she will give to a pregnant mother of a less than 6-month-old baby.

Method	Description	Advantages/Uses	Disadvantages/Limitations	Example or Application
Real-world experience	1. To develop certain attitudes and practice skills, trainees are made to experience the real situation.	1. Realistic attitudes and skills are developed.	1. Available opportunities are limited. 2. Making the necessary arrangements takes time.	1. Experience should be well prepared, structured and followed-up. 2. An example is to have trainees live in the community for a certain period to increase their awareness of the conditions in the community.
Case-study	1. A short description of a situation in which a community health worker has to teach something to the community is presented. A problem related to teaching this subject is also given. Questions are given to direct the trainees to come up with possible solutions. They discuss their proposed solutions.	1. Trainees participate actively. 2. Useful in developing problem-solving skills. 3. Trainees immediately know how well they are doing.	1. Takes time.	Example. One of the first tasks of a new community health worker in a rural community is to discuss the possibility of a nutrition programme with the community. There have been previous attempts to establish a similar programme before but these failed. People therefore do not believe that there is a need to do this again. What will she do to convince people? The trainees discuss the advantages and disadvantages of the strategies proposed.

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ANNEX TABLE 3. COMMON METHODS FOR COLLECTING INFORMATION

Method	Description	Advantages	Limitations
Records review	1. Involves going through available documents or reports e.g., records of births, deaths, weight surveys, etc.	1. Saves time and money as available information need not be collected again.	1. Collection and compilation may not be well organized. 2. Usually not up-to-date. 3. Requires literate person to collect information.
Informal discussion or interview	1. Involves talking informally to people or individuals, without prepared questions. The responses serve as lead to the next question and topic.	1. People feel at ease and relaxed. 2. Useful especially where community health workers want to be familiarized with the community situation. 3. Allows for interaction and clarification. 4. Data tend to be reliable.	1. Information collected may not be relevant. 2. Information collected may not be representative. 3. Can be time-consuming; slow method of collecting information. 4. Value of results depends on skill of interviewer.
Observation	1. The collector observes or takes mental note of how tasks are performed, the surroundings and available materials in the place of work or home of the person being observed.	1. Useful for finding out the process of doing things and getting the details. 2. Useful for multiple information which may be difficult to give or describe by the respondent. 3. The observer may at the same time find out where to obtain more complete and accurate information. 4. More uniform and realistic information is obtained, especially where the same observer is collecting information from several sources.	1. Very costly in man-hours. 2. Requires very alert, highly skilled observer. 3. May interfere with the activities of the persons being observed.
Planned individual or group interview.	1. An individual or a representative group of individuals is asked questions from a prepared list.	1. Ambiguities can be clarified in the interaction between the questioner and the person or persons questioned. 2. The interaction allows for probing. 3. Gives reliable information. 4. Group interview provides considerably more information than individual interview in a short period. The replies of other group members may stimulate others.	1. The individual interview, in particular, can be costly and slow. 2. Requires highly skilled interviewer. 3. Individuals interviewed may not be representative. 4. Group interview may be difficult to arrange.
Questionnaire	1. Involves the filling out by a large number of respondents of a specially prepared form containing a series of questions. 2. The questions may be: - open-ended questions (respondents write their answers in their own words), or	1. Can provide a large amount of information compared to previous methods described and in relation to time of originator. 2. Can cover a large number of respondents, especially if individuals fill it out on their own. 3. One of the least expensive methods in money and man-hours.	1. Many people dislike replying to long questionnaires, especially if mailed. Rate of return is usually poor. 2. Because of specific information asked, many questions are left unanswered or reply may be guessed to satisfy originator. 3. Organization and interpretation of information from open-ended questions is not easy.

Method	Description	Advantages	Limitations
Questionnaire (cont'd)	- closed-ended questions (respondents select their answers from given alternatives).	4. Very useful where people are literate. 5. Useful for collecting concrete, specific information. 6. Useful for comparing responses if well prepared.	4. Replies to closed-ended questions are very limiting.

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